

# MONTANA

## Teachers' Retirement System A Component Unit of the State of Montana



## ANNUAL REPORT FISCAL YEAR ENDED JUNE 30, 2004

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Brian Schweitzer, Governor

Montana State Library



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# MONTANA

## Teachers' Retirement System A Component Unit of the State of Montana

### ANNUAL REPORT FISCAL YEAR ENDED JUNE 30, 2004

David L. Senn  
Executive Director

Tammy Rau  
Deputy Executive Director

Prepared by:  
The Montana Teachers Retirement System  
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Helena, MT 59620-0139

<http://www.trs.doa.mt.gov>

Alternative accessible formats of this document will be provided upon request.

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# **INTRODUCTORY SECTION**

**EXECUTIVE DIRECTOR'S LETTER OF  
TRANSMITTAL**

**PPCC PUBLIC PENSION STANDARDS AWARD**

**BOARD OF DIRECTORS AND PROFESSIONAL  
CONSULTANTS**



# TEACHERS' RETIREMENT SYSTEM



1500 E. SIXTH AVENUE  
PO BOX 200139  
HELENA, MONTANA 59620-0139

(406) 444-3134

JUDY MARTZ, GOVERNOR

## STATE OF MONTANA

December 20, 2004

Honorable Brian Schweitzer  
Governor of Montana  
Room 204, State Capitol  
Helena, MT 59620

Dear Governor Schweitzer:

On behalf of the Montana Teachers' Retirement Board, we are pleased to present the Montana Teachers' Retirement System Annual Report for the fiscal year ended June 30, 2004. This report is intended to provide comprehensive information on the financial operations of the Montana Teachers' Retirement System (TRS) for the year. Responsibility for the accuracy of the data, and the completeness and fairness of the report rests with the management of the TRS.

This report contains four sections:

1. An Introductory section, which includes this letter of transmittal and a list of the board members, administrative officers and professional consultants.
2. A Financial section containing the independent auditor's report, management's discussion and analysis, and the financial statements with accompanying footnotes, required supplementary information and supporting schedules.
3. An Actuarial section representing the results of our most recent annual actuarial valuation.
4. A Statistical section containing tables of significant data.

The TRS was established by state law in 1937 and has completed its 67<sup>th</sup> year of operation. The TRS is providing services to over 18,200 active members and managing assets valued in excess of \$2.46 billion.

### Investment Activity

The TRS investment portfolio posted a 13.3% return, resulting in an overall increase in the fair market value of its investments. The System's total annualized rate of return over the last five and ten years was 1.38% and 7.97% respectively. The Board of Investments (BOI) invests the TRS and other pension portfolios for the long-term and its investment strategies are designed to provide sufficient returns over time. However, there is no guarantee of future investment performance. Performance in any given year is dependent not only on the BOI's investment




performance but also on the performance of the markets themselves, which are impacted by domestic and global economic conditions, interest rates, and government policies.

## Conclusion

The Teachers' Retirement Board is pleased to submit this 2004 annual report to you reflecting an unqualified opinion from the Legislative Audit Division, which can be found on page 13.

On behalf of the Board, I would like to thank the staff, the Board's advisors, and the many people whose commitment, dedication, and proficiency has directly contributed to the successful operation of the financial soundness of the Montana Teachers' Retirement System. The Teachers' Retirement Board and staff look forward to continuing to serve the educators of Montana.

Sincerely,

A handwritten signature in black ink, appearing to read "David L. Senn". The signature is fluid and cursive, with a large initial "D" and "S".

David L. Senn  
Executive Director





**Public Pension Coordinating Council**  
**Public Pension Standards**  
**2003 Award**

Presented to

**Montana Teachers Retirement System**

In recognition of meeting professional standards for  
plan design and administration as  
set forth in the Public Pension Standards.

*Presented by the Public Pension Coordinating Council, a confederation of*

National Association of State Retirement Administrators (NASRA)  
National Conference on Public Employee Retirement Systems (NCPERS)  
National Council on Teacher Retirement (NCTR)

A handwritten signature in black ink, reading 'Alan H. Winkle'.

Alan H. Winkle  
Program Administrator



**TEACHERS' RETIREMENT SYSTEM  
BOARD OF DIRECTORS AND  
PROFESSIONAL CONSULTANTS**

**BOARD OF DIRECTORS**

|   |                      |
|---|----------------------|
| TIM RYAN<br>CHAIR<br>Public Representative        | 07-01-04 to 07-01-09 |
| SCOTT DUBBS<br>VICE CHAIR<br>Active Member        | 07-01-04 to 07-01-09 |
| KARI PEIFFER<br>Active Member (Classroom Teacher) | 07-01-02 to 07-01-07 |
| BARBARA FOSTER<br>Retired Member                  | 08-01-01 to 07-01-06 |
| MONA BILDEN<br>Active Member                      | 02-11-03 to 07-01-06 |
| JAMES TURCOTTE<br>Public Representative           | 07-01-01 to 07-01-05 |

**PROFESSIONAL CONSULTANTS**

|           |   |
|-----------|---|
| MILLIMAN  | Actuaries & Consultants<br>Seattle, WA 98101        |
| ICEMILLER | Legal & Business Advisors<br>Indianapolis, IN 46282 |



# **FINANCIAL SECTION**

**INDEPENDENT AUDITOR'S REPORT**

**MANAGEMENT'S DISCUSSION & ANALYSIS**

**STATEMENT OF FIDUCIARY NET ASSETS**

**STATEMENT OF CHANGES  
IN FIDUCIARY NET ASSETS**

**NOTES TO FINANCIAL STATEMENTS**

**REQUIRED SUPPLEMENTARY INFORMATION**

**SUPPORTING SCHEDULES**



# LEGISLATIVE AUDIT DIVISION

Scott A. Seacat, Legislative Auditor  
John W. Northey, Legal Counsel



Deputy Legislative Auditors:  
Jim Pellegrini, Performance Audit  
Tori Hunthausen, IS Audit & Operations  
James Gillett, Financial-Compliance Audit

## INDEPENDENT AUDITOR'S REPORT

To the Teachers' Retirement Board:

We have audited the accompanying Statement of Fiduciary Net Assets of the Teachers' Retirement System, a component unit of the state of Montana, as of June 30, 2004, and 2003, and the related Statement of Changes in Fiduciary Net Assets for each of the fiscal years then ended. These financial statements are the responsibility of the Teachers' Retirement Board. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Teachers' Retirement System as of June 30, 2004, and 2003, and the changes in fiduciary net assets for each of the fiscal years then ended, in conformity with accounting principles generally accepted in the United States of America.

Management's Discussion and Analysis, the Schedule of Funding Progress, and the Schedule of Contributions from the Employer and Other Contributing Entities are not a required part of the basic financial statements but are supplementary information required by the Governmental Accounting Standard Board. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

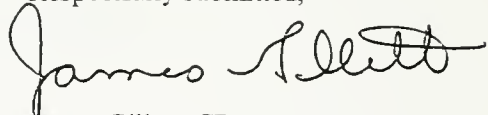
Our audit was conducted for the purpose of forming an opinion on the basic financial statements of the Teachers' Retirement System. The Supporting Schedules of Administrative Expenses and Consultant and Professional Services are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Room 160, State Capitol Building PO Box 201705 Helena, MT 59620-1705  
Phone (406) 444-3122 FAX (406) 444-9784 E-Mail lad@state.mt.us



The Introductory Section, Actuarial Section, and Statistical Section listed in the foregoing table of contents are presented for the purpose of additional analysis and are not a required part of the financial statements. Such additional information has not been subjected to the auditing procedures applied in the audit of the financial statements and, accordingly, we express no opinion on it.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James Gillett", with a stylized, cursive script.

James Gillett, CPA  
Deputy Legislative Auditor

October 29, 2004

## **TEACHERS' RETIREMENT SYSTEM MANAGEMENT'S DISCUSSION AND ANALYSIS**

This discussion and analysis of the Montana Teachers' Retirement System's (TRS) annual report provides a narrative overview of the TRS's financial activities for the fiscal year ended June 30, 2004. Please read this in conjunction with the transmittal letter presented in the introductory section and the financial statements with accompanying footnotes, required supplementary information with notes, and supporting schedules included later in this financial section.

### **Overview of the Financial Statements**

This financial section consists of two financial statements with footnotes, two schedules of historical trend information with footnotes, and two supporting schedules. The Statement of Fiduciary Net Assets reflects the resources available to pay benefits to retirees and beneficiaries. The Statement of Changes in Fiduciary Net Assets presents the changes that occurred in those resources for the fiscal year ended.

The Schedule of Funding Progress presents historical trend information about the actuarially funded status for the TRS plan from a long-term, ongoing perspective and the progress made in accumulating sufficient assets to pay benefits when due. The Schedule of Contributions from the Employer and Other Contributing Entities displays historical trend data of the annual required employer contributions and the actual contributions made by employers in relation to the requirement.

The schedule of administrative expenses is a presentation of what comprises the administrative expense item as reported on the Statement of Changes in Fiduciary Net Assets. The schedule of consultant and professional services is used to provide information on fees paid to outside professionals.

### **Financial Highlights**

- The TRS plan net assets increased by \$231.2 million representing a 10.9% increase for the fiscal year ended June 30, 2004.
- Total contributions to the plan also increased by 3.5% from the previous year from \$104.3 million to \$107.9 million.
- Net investment income (fair value of investments plus investment income less investment expense) showed a gain of \$155.5 million for the fiscal year. Representing an increase of 123.1%.
- Pension benefits and withdrawals paid to beneficiaries and plan members totaled \$156.1 million for the fiscal year, an increase of 6.4% from the previous year.
- Administrative expenses totaled \$1.51 million down from \$1.86 million, a decrease of 18.8%.

## Financial Analysis (in millions)

|                            | <u>FY2004</u> | <u>FY2003</u> | <u>Percent<br/>Inc/(Dec)</u> |
|----------------------------|---------------|---------------|------------------------------|
| Cash/Cash Equivalents      | \$ 78.1       | \$ 67.2       | 16.2 %                       |
| Investments (fair value)   | 2,362.5       | 2,098.8       | 12.6                         |
| Liabilities                | 109.2         | 70.4          | 55.1                         |
| Net Assets                 | 2,354.8       | 2,123.6       | 10.9                         |
| Contributions              | 107.9         | 104.3         | 3.5                          |
| Net Investment Income      | 281.8         | 126.3         | 123.1                        |
| Benefit Pmts & Withdrawals | 156.1         | 146.7         | 6.4                          |
| Administrative Expenses    | 1.51          | 1.86          | (18.8)                       |

- The increase in cash/cash equivalents is due primarily to an increase in our number of shares held in the Short Term Investment Pool.
- The increase in liabilities is due mostly to a \$38.4 million increase in the value of Securities on Loan at June 30, 2004.
- The increase in net investment income was due primarily to the greater appreciation of \$121.8 million in the fair value of our investments from the previous year.
- The increase in benefit payments and withdrawals was due to an increase in the number of retirees and beneficiaries plus the 1.5% guaranteed annual benefit adjustment.
- The decrease in administrative expenses was due primarily to a decrease in amortization costs of intangible assets.

## Overview of the Actuarial Funding

While the financial statements show a positive net investment income return of \$281.8 million for fiscal year 2004, the actuarial return is still less than the actuarial assumed rate of 8% as illustrated below. Actuarial gains or losses result when the return on the actuarial value of assets differs from the actuarial investment return assumption.

| <u>Fiscal Year</u>    | <u>Market Return</u> | <u>Actuarial Return</u> | <u>Actuarial Return over<br/>8.0% Assumption</u> |
|-----------------------|----------------------|-------------------------|--|
| 7/1/2000 to 6/30/2001 | (5.1)%               | 9.2%                    | 1.2%   |
| 7/1/2001 to 6/30/2002 | (7.3)%               | 3.8%                    | (4.2)%   |
| 7/1/2002 to 6/30/2003 | 6.2%                 | 1.6%                    | (6.4)%   |
| 7/1/2003 to 6/30/2004 | 13.3%                | 2.1%                    | (5.9)%   |

The asset loss in the last two years increased the unfunded actuarial accrued liability (UAAL) by about \$302 million. Without the asset losses, the UAAL would be closer to \$571 million instead of the \$873 million showing in the Schedule of Funding Progress. The root of these losses were the negative market returns of (5.1)% and (7.3)% in the years ending 6/30/2001 and 6/30/2002. The asset valuation method spreads any market value gains or losses evenly over the five years after they occur. As of July 1, 2002 the System had \$443 million in unrecognized asset losses.

At July 1, 2004 the System has \$131 million in unrecognized asset losses. This \$131 million in unrecognized asset losses, if not offset by future gains, will cause the contributions needed to amortize the UAAL in future valuations to increase even further. Therefore, to be actuarially sound in future years, the System will need to incur asset returns well over the new 7.75% assumption or an increase in contribution rates.

The actuarial valuation as of July 1, 2004, was completed and distributed in November 2004. Based on the results of this valuation the TRS Board will recommend options to the Legislature that are considered necessary to be actuarially sound.

An actuarial review of the TRS was contracted by the State of Montana's Legislative Audit Division and the Teacher's Retirement Board in 2004. The actuarial review included a full reproduction of the July 1, 2004 actuarial valuation results prepared by the TRS actuary, Milliman, and a review of recent experience studies and actuarial assumptions and methods used in the valuations. Mellon was selected to perform the actuarial review.

Mellon reported that they did not find any significant errors or concerns regarding the valuation prepared by Milliman and the valuation fairly represents the actuarial position and funding requirements of the retirement system. Mellon also concurs with Milliman's conclusion that the employer contribution rate should be increased by at least 2.8% in order to meet a 30-year amortization period. The report contained only two recommendations for improving disclosure and communication of actuarial valuation results. These recommendations do not impact the actuarial valuation results. The full report is available from the TRS, or online at [www.trs.doa.mt.gov/trs\\_board\\_info.htm](http://www.trs.doa.mt.gov/trs_board_info.htm).

**TEACHERS' RETIREMENT SYSTEM**  
**A COMPONENT UNIT OF THE STATE OF MONTANA**  
**STATEMENT OF FIDUCIARY NET ASSETS**  
**JUNE 30, 2004 AND 2003**

|  | <u><b>2004</b></u>            | <u><b>2003</b></u>            |
|--|-------------------------------|-------------------------------|
| <b>ASSETS</b>                                    |                               |                               |
| Cash/Cash Equivalents-Short Term                 |                               |                               |
| Investment Pool (Note B)                         | \$ 78,154,124                 | \$ 67,248,556                 |
| Receivables:                                     |                               |                               |
| Accounts Receivable                              | 14,337,374                    | 15,568,694                    |
| Interest Receivable                              | 8,055,656                     | 8,927,249                     |
| Due from Primary Government                      | 80,195                        | 84,300                        |
| Total Receivables                                | <u>\$ 22,473,225</u>          | <u>\$ 24,580,243</u>          |
| Investments, at fair value (Note B):             |                               |                               |
| Mortgages  | \$ 54,989,718                 | \$ 90,823,459                 |
| Investment Pools                                 | 2,189,335,826                 | 1,926,576,113                 |
| Other Investments                                | 9,708,721                     | 11,326,655                    |
| Securities Lending Collateral                    | 108,506,737                   | 70,099,111                    |
| Total Investments                                | <u>\$ 2,362,541,002</u>       | <u>\$2,098,825,338</u>        |
| Assets Used in Plan Operations:                  |                               |                               |
| Land and Buildings                               | \$ 193,844                    | \$ 193,844                    |
| Less: Accumulated Depreciation                   | (128,591)                     | (124,827)                     |
| Equipment  | 147,087                       | 147,087                       |
| Less: Accumulated Depreciation                   | (126,281)                     | (121,066)                     |
| Prepaid Expense                                  | 3,517                         | 2,992                         |
| Intangible Assets, net of amortization (Note D)  | 776,505                       | 3,320,631                     |
| Total Other Assets                               | <u>\$ 866,081</u>             | <u>\$ 3,418,661</u>           |
| <b>TOTAL ASSETS</b>                              | <u><b>\$2,464,034,432</b></u> | <u><b>\$2,194,072,798</b></u> |
| <b>LIABILITIES</b>                               |                               |                               |
| Accounts Payable                                 | \$ 247,108                    | \$ 212,760                    |
| Due to Primary Government                        | 327,761                       | 22,562                        |
| Securities Lending Liability (Note B)            | 108,506,737                   | 70,099,111                    |
| Compensated Absences (Note B)                    | 108,627                       | 104,105                       |
| <b>TOTAL LIABILITIES</b>                         | <u><b>\$ 109,190,233</b></u>  | <u><b>\$ 70,438,538</b></u>   |
| <b>NET ASSETS HELD IN TRUST</b>                  |                               |                               |
| <b>FOR PENSION BENEFITS (A Schedule of</b>       |                               |                               |
| <b>Funding Progress is presented on page 27)</b> | <u><b>\$2,354,844,199</b></u> | <u><b>\$2,123,634,260</b></u> |

*The accompanying Notes to the Financial Statements  
are an integral part of this financial statement.*

TEACHERS' RETIREMENT SYSTEM  
A COMPONENT UNIT OF THE STATE OF MONTANA  
STATEMENT OF CHANGES IN FIDUCIARY NET ASSETS  
FISCAL YEARS ENDED JUNE 30, 2004 AND 2003

|  | <u>2004</u>                   | <u>2003</u>                   |
|--|-------------------------------|-------------------------------|
| <b>ADDITIONS</b>   |                               |                               |
| Contributions:   |                               |                               |
| Employer   | \$ 55,773,716                 | \$ 53,276,950                 |
| Plan Member  | 51,382,941                    | 50,221,491                    |
| Other  | <u>770,379</u>                | <u>753,838</u>                |
| Total Contributions  | \$ 107,927,036                | \$ 104,252,279                |
| Misc Income  | \$ 0                          | \$ 4,011                      |
| Workers Comp. Dividend   | 199                           | 213                           |
| Taxes  | 53                            | 236                           |
| Investment Income:   |                               |                               |
| Net Appreciation in Fair Value of Investments                                  | \$ 152,473,601                | \$ 30,665,509                 |
| Investment Earnings  | 132,052,991                   | 98,020,849                    |
| Security Lending Income (Note B)   | <u>1,153,276</u>              | <u>1,268,968</u>              |
| Investment Income  | \$ 285,679,868                | \$ 129,955,326                |
| Less: Investment Expense   | 2,948,793                     | 2,683,417                     |
| Less: Security Lending Expense (Note B)  | <u>938,082</u>                | <u>1,025,993</u>              |
| Net Investment Income  | <u>\$ 281,792,993</u>         | <u>\$ 126,245,916</u>         |
| Total Additions  | <u>\$ 389,720,281</u>         | <u>\$ 230,502,655</u>         |
| <b>DEDUCTIONS</b>  |                               |                               |
| Benefit Payments   | \$ 150,270,797                | \$ 140,229,496                |
| Withdrawals  | 5,843,069                     | 6,468,324                     |
| Administrative Expense   | 1,506,694                     | 1,860,967                     |
| Loss on Intangible Assets (Note D)   | <u>889,782</u>                | <u>0</u>                      |
| Total Deductions   | <u>\$ 158,510,342</u>         | <u>\$ 148,558,787</u>         |
| <b>NET INCREASE (DECREASE)<br/>IN FIDUCIARY NET ASSETS</b>                     | <b>\$ 231,209,939</b>         | <b>\$ 81,943,868</b>          |
| <b>NET ASSETS HELD IN TRUST<br/>FOR PENSION BENEFITS<br/>BEGINNING OF YEAR</b> | <b>2,123,634,260</b>          | <b>2,041,691,136</b>          |
| Prior Period Adjustment  | <u>                    </u>   | <u>(744)</u>                  |
| <b>END OF YEAR</b>   | <b><u>\$2,354,844,199</u></b> | <b><u>\$2,123,634,260</u></b> |

*The accompanying Notes to the Financial Statements  
are an integral part of this Financial Statement.*



TEACHERS' RETIREMENT SYSTEM  
A COMPONENT UNIT OF THE STATE OF MONTANA  
NOTES TO THE FINANCIAL STATEMENTS  
FISCAL YEARS ENDED JUNE 30, 2004 AND 2003

**NOTE A. DESCRIPTION OF PLAN**

The Teachers' Retirement Board is the governing body of a mandatory multiple-employer cost-sharing defined benefit pension plan, which provides retirement services to persons in Montana employed as teachers or professional staff of any public elementary or secondary school, community college or unit of the university system. The system was established by the state of Montana in 1937 to provide retirement, death and disability benefits and is governed by Title 19, chapter 20, of the MCA.

At June 30, 2004, the number and type of reporting entities participating in the system were as follows:

|                         |          |
|-------------------------|----------|
| Local School Districts  | 372      |
| Community Colleges      | 3        |
| University System Units | 2        |
| State Agencies          | <u>8</u> |
| Total                   | 385      |

At June 30, 2004, the system membership consisted of the following:

|  |              |
|--|--------------|
| Retirees and Beneficiaries Currently Receiving Benefits            | 9,970        |
| Terminated Employees Entitled to<br>But Not Yet Receiving Benefits | 9,330        |
| Current Active Members:  |              |
| Vested   | 11,683       |
| Nonvested  | <u>6,574</u> |
| Total Membership   | 37,557       |

The pension plan provides retirement benefits and death and disability benefits. Employees with a minimum of 25 years of service or who have reached age 60 with 5 years of service are eligible to receive an annual retirement benefit equal to creditable service years divided by 60 times the average final compensation. Final compensation is the average of the highest three consecutive years of earned compensation. Benefits fully vest after 5 years of creditable service. Vested employees may retire at or after age 50 and receive reduced retirement benefits. A Guaranteed Annual Benefit Adjustment (GABA) of 1.5% is payable each January if the retiree has received at least 36 monthly retirement benefit payments prior to January 1 of the year in which the adjustment is to be made.



## **NOTE B. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

### **Basis of Accounting**

The TRS, a discretely presented component unit Pension Trust Fund of the State of Montana financial reporting entity, maintains its accounts on the accrual basis of accounting. Employee and employer contributions are recognized as revenues in the period in which employee services are performed and expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made.

### **Compensated Absences**

Compensated absences represent 100 percent of accrued vacation and 25 percent of accrued sick leave for TRS personnel at June 30, 2004 and June 30, 2003.

### **Valuation of Investments**

Investments are reported at fair value. Short-term investments are reported at cost, which approximates fair value. Mortgages were decreased by unamortized mortgage discount of \$11,040 in fiscal year 2004 and \$17,326 in fiscal year 2003. No investment in any one organization represents 5% or more of the net assets available for pension benefits. Investment units are bought/sold on the first business day of each month upon the decision of the Board of Investment's (BOI) Chief Investment Officer.

The six areas of investment during June 30, 2004 and 2003 include: Montana Domestic Equity Pool (MDEP); Montana International Equity Pool (MTIP); Short-Term Investment Pool (STIP); Retirement Funds Bond Pool (RFBP); Montana Private Equity Pool (MPEP), and Other Investments.

1. The BOI established the MDEP in April 2003. The MDEP portfolio may include common stock, equity index, preferred stock, convertible equity securities, American Depositary Receipts and equity derivatives. The initial MDEP unit value on May 1, 2003 was \$100. Unit value at June 30, 2004 and June 30, 2003 was \$122.95 per unit and \$106.01 per unit respectively.

2. The MTIP portfolio includes equity investments in six funds - BOI Internal International through January 2004, Pyrford International, Schroder Investment Management NA, Nomura Asset Management U.S.A, Inc. from December 2003, SG Yamaichi Asset Management Co. through October 2003, the BGI MSCI Europe Index Fund and the BGI All Country Pacific Index Strategy Fund. The six funds may invest in securities of foreign-based corporations listed on legal and recognized foreign exchanges as well as domestic exchanges. Security types may include ordinary common shares, preferred shares, convertible securities, American Depositary Receipts (ADR's), Global Depositary Receipts (GDR's), and other global securities, as appropriate. Unit values are calculated weekly and once a month at the close of the last business day of the month, based upon the fair value of the MTIP equity holdings, other assets and liabilities. Unit value at June 30, 2004 and June 30, 2003 was \$107.70 per unit and \$83.39 per unit respectively.

3. STIP as per Montana Code Annotated (MCA) sections 17-6-201, 202 and 204, requires investments by state agencies of available funds. The STIP unit value is fixed at \$1 for both participant buys and sells. The STIP portfolio may include asset-backed securities, commercial paper, corporate and government securities, repurchase agreements, and variable-rate (floating-rate) instruments to provide diversification and a competitive rate of return.

According to the Governmental Accounting Standards Board (GASB) Statement No. 31, Accounting and Financial Reporting for Certain Investments and External Investment Pools, STIP is considered an external investment pool. An external investment pool is defined as an arrangement that pools the monies of more than one legally separate entity and invests, on the participant's behalf, in an investment portfolio. STIP is also classified as a "2a7-like" pool. A 2a7-like pool is an external investment pool that is not registered with the Securities and Exchange Commission (SEC) as an investment company, but has a policy that it will, and does, operate in a manner consistent with the SEC's Rule 2a7 of the Investment Company Act of 1940. If certain conditions are met, 2a7-like pools are allowed to use amortized cost rather than fair value to report net assets to compute unit values. The BOI has adopted a policy to treat STIP as a 2a7-like pool.

4. RFBP portfolio includes corporate asset-backed, other corporate, U. S. government mortgage-backed, government, Yankee securities and cash investments. Unit values are calculated weekly and at month end based on portfolio pricing. Unit value at June 30, 2004 and June 30, 2003 was \$104.32 per unit and \$110.84 per unit respectively. Realized portfolio gains/losses are distributed at least annually. The RFBP portfolio includes structured financial instruments known as REMICs (Real Estate Mortgage Investment Conduits).

As of June 30, 2004 and June 30, 2003, Enron Corp. and Burlington Industries, Inc. presented legal and higher credit risks to the RFBP.

The RFBP holds a \$7 million par 6.40% Enron bond maturing July 15, 2006 and a \$7 million par 6.95% Enron bond maturing July 15, 2028. The combined book value of these securities was \$13,582,030 as of November 30, 2001. On December 12, 2001, the Enron Corp. filed for Chapter 11 bankruptcy protection. Accordingly, the November 2001 book value for the two issues was reduced to \$5.6 million as of June 30, 2002. In October 2002, the book value was reduced to \$2.8 million for both issues. In July 2003, both issues were sold, on the market, for a total of \$2.36 million.

The BOI owns a Burlington Industries, Inc., \$6 million par, 7.25% bond maturing September 15, 2005. In September 2000, the company announced a reduction of stockholders equity. Due to an increasing senior bank line and declining credit trend, the bond ratings for this issue were downgraded, in May 2001, by the Moody's and Standard & Poor's rating agencies. During fiscal year 2001, the book value of Burlington Industries Inc. was reduced from the August 31, 2000 book value of \$5,609,640 to \$2,400,000. Due to the company's filing for Chapter 11 bankruptcy protection on November 11, 2001, the book value was reduced to \$1,200,000. In October 2003, Burlington Industries, Inc. received court approval to sell its assets. Under the company's recovery plan, the BOI received \$1,454,961 in August 2004 for its unsecured claim. This transaction reduced the book value to \$0 and generated a gain of \$254,961. The BOI is expected to receive additional proceeds for its claim.

## DEUTSCHE BANK SECURITIES, INC. COMPLAINT

The BOI received a summons and complaint, dated September 3, 2002, regarding the sale of a Pennzoil Quaker State, \$5 million par, 6.75% corporate bond maturing April 1, 2009. Deutsche Bank Securities claims a “breach of contract” for the March 25, 2002 sale of the bond at a price of \$94.669 plus accrued interest. Deutsche Bank Securities seeks damages of \$538,632 for the additional costs incurred to acquire the bond from third parties, plus any statutory interest, costs and expenses. On October 1, 2002, Shell Oil Company acquired Pennzoil and subsequently announced a public tender of Pennzoil Quaker State debt. The BOI tendered the Pennzoil Quaker State holdings on October 8, 2002 at a price of \$113.099. The tender was accepted with a settlement date of November 1, 2002. On November 4, 2002, the BOI received \$5,683,075 in principal and interest plus \$150,000 as a consent fee. As of September 10, 2004, this matter is still pending.

5. The MPEP was established by the BOI in April 2002. Given the complexity and specialization of private equity investment, the BOI contracts with seven private equity managers to invest in venture capital, leveraged buyout and other private equity investments. The retained private equity managers are Adams Street Partners, Kohlberg, Kravis, Roberts and Company (KKR), Welsh Carson Anderson and Stowe, Madison Dearborn Partners, Lexington Partners, Oaktree Capital Management and ArcLight Energy Partners. According to BOI policy, the external managers may not invest more than 30% of total private equity invested capital in non-US company partnerships unless the fund is a designated non-US fund. Total non-US exposure in MPEP is limited to 25% of total invested capital.

The MPEP portfolio includes venture capital, leveraged buyout, mezzanine, distressed debt, special situation and secondary investments. Venture capital represents private equity investments in early stage financing of rapidly growing companies with an innovative product or service. Leveraged buy-outs permit an investment group to acquire a company by leveraging debt, as a financing technique, to establish a significant ownership position on behalf of the company’s current management team. Mezzanine investments are the subordinated debt and/or equity of privately owned companies. Distressed debt represents the private and public debt of companies that appear unlikely to meet their financial obligations. Special situation investments include the investment in the exploration for oil and/or gas reserves or in the development of proven reserves, investment in land to harvest timber, and investments that have a special component usually related to geographical, economic, or social issues. Secondary investments are investments in previously owned limited partnerships. These investments may be direct or via a general partner specializing in secondary investments.

The TRS transferred all their venture capital and leveraged buyout investments, at cost, into the MPEP at the start-up date and were issued units according to the fair value of each participant’s portfolio and cash contributions. Unit value at June 30, 2004 and June 30, 2003 was \$99.26 and \$102.28 per unit respectively. The unit value is calculated at month end.

6. Other Investments are purchased in accordance with the statutorily mandated “Prudent Expert Principle” and applicable investment restrictions of the participants. The TRS portfolio includes



residential mortgages, commercial loans and real estate investments. The real estate investments and mortgages are valued based on a discounted cash flow.

Real Estate - In January 1996, the BOI, on behalf of the Public Employees' and Teachers' Retirement funds, purchased the 100 North Park Avenue Building in Helena, Montana as a real estate investment. Acquired for a cost of \$4,864,326, the building carries a fair value of \$5,795,000 as of June 30, 2004. During fiscal year 2004, building improvements for lighting, fire alarms, sprinkler systems, hallway remodeling and leasing fees totaling \$453,209 were added to the cost of the building. Building improvements and leasing fees totaling \$129,465 were added to the cost of the building in fiscal year 2003. The three-story building provides office space for approximately eight to ten tenants.

In August 1997, the BOI authorized the construction of an office building at 2401 Colonial Drive in Helena, as a real estate investment owned equally by the Public Employees' and Teachers' Retirement funds. Construction costs, including interest capitalization, totaled \$6,481,741 as of June 30, 2000. In fiscal year 2004, office remodeling payments and leasing fees of \$54,517 were added to the building cost. For fiscal year 2003, \$155,800 was expended on building landscaping, leasing fees, lighting and construction. The three-story building, providing office space for three tenants, was occupied in November 1999. As of June 30, 2004, the building carries a cost and fair value of \$7,041,755 and \$7,581,000, respectively.

In August 1999, the BOI authorized the purchase of a new office building at 2273 Boot Hill Court in Bozeman, Montana. Construction was completed in March 2004. The Public Employees' and Teachers' Retirement funds purchased the building, as a real estate investment with equal ownership, for \$2,051,032. The building, located on state school trust land, is occupied by four state agencies. As of June 30, 2004, the building carries a fair value of \$2,082,014.

Securities Lending - Under the provisions of state statutes, BOI, via a Securities Lending Authorization Agreement, authorized the custodial bank, State Street Bank and Trust, to lend the BOI securities to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. During the period the securities are on loan, BOI receives a fee and the custodial bank must initially receive collateral equal to 102 percent of the fair value of the loaned securities and maintain collateral equal to not less than 100 percent of the fair value of the loaned security. BOI retains all rights and risks of ownership during the loan period.

During fiscal years 2004 and 2003, State Street Bank lent, on behalf of the BOI, certain securities held by State Street, as custodian, and received US dollar currency cash, US government securities, and irrevocable bank letters of credit. State Street does not have the ability to pledge or sell collateral securities unless the borrower defaults.

The BOI did not impose any restrictions during fiscal years 2004 and 2003 on the amount of the loans that State Street Bank made on its behalf. There were no failures by any borrowers to return loaned securities or pay distributions thereon during fiscal years 2004 and 2003.

Moreover, there were no losses during fiscal years 2004 and 2003 resulting from a default of the borrowers or State Street Bank.

During fiscal years 2004 and 2003, the BOI and the borrowers maintained the right to terminate all securities lending transactions on demand. The cash collateral received on each loan was invested, together with the cash collateral of other qualified plan lenders, in a collective investment pool, the Securities Lending Quality Trust. The relationship between the average maturities of the investment pool and the BOI's loans was affected by the maturities of the loans made by other plan entities that invested cash collateral in the collective investment pool, which the BOI could not determine.

As of June 30, 2004, the carrying and fair value of the underlying securities on loan for the All Other Funds was \$219,045,397 and \$222,235,651, respectively. The collateral provided for the securities on loan totaled \$228,078,235 representing \$226,699,848 in cash and \$1,378,387 in securities collateral.

As of June 30, 2003, the carrying and fair value of the underlying securities on loan for the All Other Funds was \$49,363,730 and \$55,128,809, respectively. The collateral provided for the securities on loan totaled \$56,643,400 in cash collateral.

#### DEUTSCHE BANK SECURITIES, INC. COMPLAINT

The BOI received a summons and complaint, dated September 3, 2002, regarding the sale of a Pennzoil Quaker State, \$2 million par, 6.75% corporate bond maturing April 1, 2009. Deutsche Bank Securities claims a "breach of contract" for the March 25, 2002 sale of the bond at a price of \$94.669 plus accrued interest. Deutsche Bank Securities seeks damages of \$215,453 for the additional costs incurred to acquire the bond from third parties, plus any statutory interest, costs and expenses. On October 1, 2002, Shell Oil Company acquired Pennzoil and subsequently announced a public tender of Pennzoil Quaker State debt. The BOI tendered the Pennzoil Quaker State holdings on October 8, 2002 at a price of \$113.099. The tender was accepted with a settlement date of November 1, 2002. On November 4, 2002, the BOI received \$2,273,230 in principal and interest plus \$60,000 as a consent fee. As of November 5, 2004, this matter is still pending.

## **NOTE C. CONTRIBUTIONS**

The TRS funding policy provides for monthly employee and employer contributions at rates specified by state law. Plan members are currently required to contribute 7.15% of their earned compensation and employers contribute 7.47% of earned compensation. The State General Fund contributes an additional 0.11% of earned compensation. Each employer in the Montana university system shall contribute to the TRS a supplemental employer contribution currently at a rate of 4.04% of the total compensation of employees participating in the Optional Retirement Program (ORP). An actuary determines the actuarial implications of the funding requirement in biennial actuarial valuations. The actuarial method used to determine the implications of the statutory funding level is the entry age actuarial cost method, with both normal cost and amortization of the accrued liability determined as a level percentage of payroll. The actuarial valuation prepared as of July 1, 2004, the most recent valuation date, indicates the statutory rate is insufficient to fund the normal cost and to amortize the unfunded accrued liability under the entry age actuarial cost method over 30 years. The unfunded actuarial accrued liability is included in the Schedule of Funding Progress.

## **NOTE D. CAPITAL ASSET LOSS**

In May of 1999, TRS contracted with BearingPoint, Inc. (formerly KPMG Consulting), to customize, integrate and implement the PeopleSoft Pension Administration, Human Resource and Financials modules. On December 23, 2002, the Board indefinitely suspended the implementation date for the PeopleSoft system in anticipation of discontinuing the contract with BearingPoint. On July 22, 2003 working through a mediator an agreement was reached in which BearingPoint would pay TRS \$1.5 million and the contract would end. TRS received the \$1.5 million payment on September 12, 2003. At that time it was determined the actual value of the usable software development to TRS was \$847,096. This resulted in a net loss on intangible assets of \$889,782 to TRS in fiscal year 2004.

**TEACHERS' RETIREMENT SYSTEM  
A COMPONENT UNIT OF THE STATE OF MONTANA  
REQUIRED SUPPLEMENTARY INFORMATION**

**Schedule of Funding Progress**  
(All dollar amounts in millions)

| Actuarial<br>Valuation Date | Actuarial Value of<br>Assets | Actuarial Accrued<br>Liabilities<br>(AAL) <sup>(1)</sup> | Unfunded Actuarial<br>Accrued Liabilities<br>(UAAAL) <sup>(2)</sup> | Funded Ratio | Covered<br>Payroll <sup>(3)</sup> | UAAAL as a<br>Percentage of<br>Covered Payroll |
|-----------------------------|------------------------------|--|---|--------------|-----------------------------------|--|
| July 1, 1994                | \$ 1,157.5                   | \$ 1,712.9   | \$ 555.4  | 67.6%        | \$ 472.9                          | 117.4%   |
| July 1, 1996                | 1,376.7                      | 1,939.6  | 562.9   | 71.0         | 501.5                             | 112.2  |
| July 1, 1998 <sup>(4)</sup> | 1,809.0                      | 2,123.3  | 314.3   | 85.2         | 529.8                             | 59.3   |
| July 1, 1998 <sup>(5)</sup> | 1,809.0                      | 2,342.7  | 533.7   | 77.2         | 529.8                             | 100.7  |
| July 1, 2000 <sup>(6)</sup> | 2,247.5                      | 2,648.3  | 400.8   | 84.9         | 537.5                             | 74.6   |
| July 1, 2000 <sup>(7)</sup> | 2,247.5                      | 2,652.0  | 404.5   | 84.7         | 537.5                             | 75.3   |
| July 1, 2002                | 2,484.8                      | 2,980.1  | 495.3   | 83.4         | 563.2                             | 87.9   |
| July 1, 2004                | 2,485.7                      | 3,359.2  | 873.5   | 74.0         | 600.7                             | 145.1  |

(1) Actuarial present value of benefits less actuarial present value of future normal costs based on entry age actuarial cost method.

(2) Actuarial accrued liabilities less actuarial value of assets.

(3) Covered Payroll includes compensation paid to all active employees on which contributions are calculated. Covered Payroll differs from the Active Member Valuation Payroll shown in Table C-1, which is an annualized compensation of only those members who were active on the actuarial valuation date.

(4) Results of July 1, 1998 Actuarial Valuation.

(5) July 1, 1998 results adjusted for 1.5% GABA and \$500 minimum benefit for legislation which passed in Spring 1999 and the new salary scale adopted in November 1998.

(6) Results of July 1, 2000 Actuarial Valuation.

(7) July 1, 2000 results adjusted for \$600 minimum benefit for legislation which passed in Spring 2001.



**TEACHERS' RETIREMENT SYSTEM  
A COMPONENT UNIT OF THE STATE OF MONTANA  
REQUIRED SUPPLEMENTARY INFORMATION**

**Schedule of Contributions from the Employer and Other Contributing Entities  
(All dollar amounts in thousands)**

| Fiscal<br>Year<br>Ending | Covered<br>Employee<br>Payroll <sup>(1)</sup> | Actual Employer<br>Contributions <sup>(2)</sup> | Actual Employer<br>Contribution % <sup>(2)</sup> | Annual Required<br>Contribution<br>(ARC) % <sup>(3)</sup> | Percentage of<br>ARC Contributed |
|--------------------------|---|---|--|---|----------------------------------|
| 6/30/1995                | \$ 486,809                                    | \$ 39,073                                       | 7.47%  | 7.47%   | 100%                             |
| 6/30/1996                | 501,516                                       | 40,627  | 7.47   | 7.47  | 100                              |
| 6/30/1997                | 511,934                                       | 41,640  | 7.47   | 7.47  | 100                              |
| 6/30/1998                | 529,795                                       | 44,476  | 7.47   | 7.47  | 100                              |
| 6/30/1999                | 543,071                                       | 44,987  | 7.47   | 7.47  | 100                              |
| 6/30/2000                | 537,507                                       | 48,376  | 7.58   | 7.58  | 100                              |
| 6/30/2001                | 567,861                                       | 51,524  | 7.58   | 7.58  | 100                              |
| 6/30/2002                | 563,163                                       | 51,519  | 7.58   | 7.58  | 100                              |
| 6/30/2003                | 597,131                                       | 53,277  | 7.58   | 7.58  | 100                              |
| 6/30/2004                | 600,728                                       | 55,774  | 7.58   | 7.58  | 100                              |

(1) Computed as the dollar amount of the actual employer contribution made as a percentage of payroll divided by the contribution rate expressed as a percentage of payroll.

(2) The actual and required employer contributions are expressed as a percentage of payroll. Contributions for termination pay are included in the actual employer contribution, but are not made as a set percentage of payroll. In the Fiscal Year ended June 30, 2004 there were \$6.2 million of contributions for termination pay. Contributions made as a percentage of the salaries of the members in the Optional Retirement Plan (ORP) are included. In the Fiscal Year ended June 30, 2004, \$4.7 million was contributed based on ORP member salaries. The ORP contribution rate varies from year to year.

(3) The State makes employer contributions as a percentage of actual payroll. Thus, as long as the percentage equals the percentage required by the most recent actuarial valuation, the dollar amount of the Annual Required Contributions (ARC) is equal to the actual dollar amount of the required employer contributions.

**TEACHERS' RETIREMENT SYSTEM**  
**A COMPONENT UNIT OF THE STATE OF MONTANA**  
**NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION**

**Actuarial Cost Method**

The actuarial valuation was prepared using the entry age actuarial cost method. Under this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The normal cost was first calculated for each individual member. The normal cost rate was defined to equal the total of the individual normal costs, divided by the total pay rate as of July 1, 2004.

The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets and (b) the actuarial present value of future normal costs is called the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is amortized as a level percentage of the projected salaries of present and future members of the System.

The ultimate cost of any pension program over time equals the benefits paid and expenses incurred while administering the program. The source of revenue used to pay for this cost is equal to the contribution from employers and employees to fund the program, plus investment return earned on contributions made through pre-funding the benefit payments.

**Valuation of Assets - Actuarial Basis**

Adopted July 1, 2000, the actuarial asset valuation method spreads asset gains and losses over five years. The expected return is determined each year based on the beginning of year market value and actual cash flows during the year. Any difference between the expected market value return and the actual market value return is recognized evenly over a period of five years. The gains and losses were smoothed starting with the fiscal year ended June 30, 1997.

**Investment Earnings**

The annual rate of investment earnings of the assets of the System is assumed to be 7.75%, compounded annually. (Adopted effective July 1, 2004)

**Guaranteed Annual Benefit Adjustment Increases**

On January 1 of each year, the retirement allowance payable must be increased by 1.5% if the retiree has received at least 36 monthly retirement benefit payments prior to January 1 of the year in which the adjustment is to be made.

## **Future Salaries**

The rates of annual salary increases assumed for the purpose of the valuation include a 4.5% annual rate of increase in the general wage level of the membership plus a variable merit and longevity rate from 0% to 4.51%. The merit and longevity increases for the Montana University System (MUS) members did not show a pattern of increasing or decreasing with service at the time of our most recent study. Therefore, the MUS members have a flat 1% merit and longevity assumption. The general wage increase assumption was adopted July 1, 2004 and the merit and longevity scales were adopted July 1, 2002.

MUS members are assumed to have a 0.63% higher average final compensation to account for the larger than average annual compensation increases observed in the years immediately preceding retirement.

## **Amortization Period**

The current employer contribution rate of 7.47% and the State General Fund contribution of 0.11% of members' salaries are insufficient to meet the actuarial cost of the System accruing at the valuation date and to amortize the unfunded actuarial liability over an open period of 30 years as of July 1, 2004.

TEACHERS' RETIREMENT SYSTEM  
A COMPONENT UNIT OF THE STATE OF MONTANA  
SUPPORTING SCHEDULES  
FISCAL YEARS ENDED JUNE 30, 2004 AND 2003

**ADMINISTRATIVE EXPENSES**

The administrative costs of the TRS are financed through realized investment income. The expenses, less amortization of intangible assets, may not exceed 1.5% of retirement benefits paid. Administrative expenses for the fiscal years ended June 30, 2004 and 2003, are outlined below:

|                                     | <u>2004</u>                | <u>2003</u>                |
|-------------------------------------|----------------------------|----------------------------|
| Budgeted Expenses:                  |                            |                            |
| Personal Services:                  |                            |                            |
| Salaries                            | \$ 587,001                 | \$ 589,127                 |
| Other compensation                  | 2,250                      | 2,000                      |
| Employee benefits                   | <u>164,040</u>             | <u>151,779</u>             |
| Total Personal Services             | <u>\$ 753,291</u>          | <u>\$ 742,906</u>          |
| Operating Expenses:                 |                            |                            |
| Contracted services                 | \$ 377,440                 | \$ 401,576                 |
| Supplies and materials              | 26,050                     | 36,052                     |
| Communications                      | 40,380                     | 38,334                     |
| Travel                              | 13,172                     | 10,624                     |
| Rent                                | 41,184                     | 31,928                     |
| Repair and maintenance              | 40,948                     | 34,016                     |
| Other expenses                      | <u>46,384</u>              | <u>16,571</u>              |
| Total Operating                     | <u>\$ 585,558</u>          | <u>\$ 569,101</u>          |
| Non-Budgeted Expenses:              |                            |                            |
| Compensated Absences                | 4,522                      | 20,294                     |
| Depreciation                        | 8,979                      | 12,795                     |
| Amortization of Intangible Assets   | <u>\$ 154,344</u>          | <u>\$ 515,872</u>          |
| Total Non-Budgeted                  | <u>\$ 167,845</u>          | <u>\$ 548,961</u>          |
| <b>Total Administrative Expense</b> | <b><u>\$ 1,506,694</u></b> | <b><u>\$ 1,860,968</u></b> |

**CONSULTANT AND PROFESSIONAL SERVICES**

|                                 | <u>2004</u>              | <u>2003</u>              |
|---------------------------------|--------------------------|--------------------------|
| Personnel Management            | \$ 4,125                 | \$ 9,688                 |
| Actuarial Services              | 45,764                   | 63,092                   |
| Legal Services                  | 31,669                   | 21,344                   |
| Medical Evaluations             | 1,025                    | 1,675                    |
| Audit Services                  | 26,099                   | 17,487                   |
| Information Technology Services | <u>105,045</u>           | <u>142,386</u>           |
| <b>Total Expense</b>            | <b><u>\$ 213,727</u></b> | <b><u>\$ 255,672</u></b> |



# **ACTUARIAL SECTION**

## **ANALYSIS OF VALUATION**

- 1. SUMMARY OF FINDINGS**
- 2. SCOPE OF THE REPORT**
- 3. ASSETS**
- 4. ACTUARIAL PRESENT VALUE  
OF FUTURE BENEFITS**
- 5. EMPLOYER CONTRIBUTIONS**
- 6. CASH FLOWS**

## **APPENDICES**





**Teachers' Retirement System**  
**A Component Unit of the State of Montana**

**Section 1**

**Summary of Findings**

As a result of the actuarial valuation of the benefits in effect under the Montana Teachers' Retirement System as of July 1, 2004, we recommend that the current employer contribution rate, 7.58% of members' salaries, be increased. The System does not currently meet the requirements of actuarial soundness because the contributions do not amortize the Unfunded Actuarial Accrued Liability over a reasonable period. The 7.58% employer contribution is composed of 7.47% from participating employers and 0.11% from the State General Fund. MCA 19-20-604 states that the employer contribution rate will be reduced by 0.11% when the amortization period of the System's unfunded actuarial accrued liability is 10 years or less according to the System's latest actuarial valuation.

An increase in the employer contribution rate of 2.87% (7.58% to 10.45%) as of July 1, 2005 is projected to maintain an amortization of the unfunded actuarial accrued liability over the 30 years beginning July 1, 2004. A 30-year amortization period is the maximum acceptable amortization period specified in Statements No. 25 and 27 of the Governmental Accounting Standards Board (GASB). It is also the trigger in the Retirement Board's funding policy for recommending to the legislature that funding be increased. The contribution increase could also be phased in over a number of years, or lessened by lowering the value of benefits provided for future members. Note that in a "contract rights" state such as Montana it is unlikely that any decrease in the value of future benefits could be made for current members.

The actuarial costs are calculated using the entry age actuarial cost method. This is the method used by most public plans. It is designed to provide a stable contribution rate as a percent of member pay. This actuarial valuation measures the adequacy of the contribution rates set in Montana State Law.

**Experience**

The 2004 actuarial valuation indicates that an actuarial loss occurred during the preceding two fiscal years. The loss is primarily due to lower returns on the assets than expected by the actuarial assumptions, and is reflected in the 1.6% and 2.1% net investment return on an actuarial basis for the past two years. The following chart compares the annual returns for the past four years.

| <u>Year</u>           | <u>Market Return</u> | <u>Actuarial Return</u> | <u>Actuarial Return over<br/>8.0% Assumption</u> |
|-----------------------|----------------------|-------------------------|--|
| 7/1/2000 to 6/30/2001 | (5.1)%               | 9.2%                    | 1.2%   |
| 7/1/2001 to 6/30/2002 | (7.3)%               | 3.8%                    | (4.2)%   |
| 7/1/2002 to 6/30/2003 | 6.2%                 | 1.6%                    | (6.4)%   |
| 7/1/2003 to 6/30/2004 | 13.3%                | 2.1%                    | (5.9)%   |

Asset gains or losses result when the return on the actuarial value of assets differs from the actuarial investment return assumption of 8.0% (7.75% starting at July 1, 2004). The actuarial return on assets has under performed the assumption by about 12% (6.4% + 5.9%) in the last two years as shown in the last column of the chart. The asset loss in the last two years increased the unfunded actuarial accrued liability (UAAL) by about \$302 million. Without the asset losses, the UAAL would be closer to \$571 million instead of the \$873 million shown in Table 8.

The root of these losses is the low market returns of (5.1)% and (7.3)% in the years ending 6/30/2001 and 6/30/2002. The asset valuation method spreads any market value gains or losses evenly over the five years after they occur. Therefore the first fifth of the loss for the year ending 6/30/2002 was recognized at 6/30/2002 and the last fifth will be recognized at 6/30/2006. At July 1, 2002 the System had \$443 million in unrecognized asset losses. At July 1, 2004 the System has \$131 million in unrecognized asset losses. This \$131 million in unrecognized asset losses, if not offset by future gains, will cause the contributions needed to amortize the UAAL in future valuations to increase even further. Therefore, to stay financially sound in the future, the System will need either (1) future gains such as asset returns well over the new 7.75% assumption, or (2) an increase in contribution rates.

### **Assumption Changes**

Effective July 1, 2004, the valuation incorporates the revised economic assumptions adopted by the Retirement Board at their May 14, 2004 meeting. The net investment return assumption was reduced from 8.00% to 7.75%, the general wage growth assumption was reduced from 5.00% to 4.50%, and the underlying inflation assumption was reduced from 4.00% to 3.50%. See Appendix A for a summary of assumptions including those changed for this 2004 valuation.

### **Benefit Changes**

There were no benefit improvements passed in the 2003 legislative session that influenced this valuation.

### **Contribution Changes**

There have been no contribution changes since the July 1, 2000 actuarial valuation.

## Impact of Changes

As stated earlier, an increase in the employer contribution rate of 2.87% (7.58% to 10.45%) as of July 1, 2005 is projected to maintain an amortization of the unfunded actuarial accrued liability over the 30 years beginning July 1, 2004. The effect of the asset losses and other experience on the employer contribution required to maintain a 30 year amortization period can be distributed approximately as follows.

### Employer Contribution Rate to Maintain a 30 Year Amortization Period

|   |   |              |
|---|---|--------------|
| July 1, 2002 Valuation 23.4 Year Contribution Rate                    |   | 7.58%        |
| If Amortized over 30 Years  | - | 0.67         |
| Effect of Changes in Benefits and Contribution Rates                  | + | 0.00         |
| Effect of Changes in Actuarial Assumptions                            | + | <u>0.67</u>  |
| July 1, 2002 Valuation 30 Year Contribution Rate                      |   |              |
| Using New Economic Assumptions  |   | 7.58%        |
| Effect of Experience Gains and Losses on Actuarial Accrued Liability: |   |              |
| Expected Decrease from Extending the Amortization Period              |   |              |
| 2 years (July 1, 2032 to July 1, 2034)                                | - | 0.19%        |
| Retired Mortality (Gain)  | - | 0.01         |
| Salary Gain / Loss  |   | 0.00         |
| Loss from Other Causes  | + | <u>0.09</u>  |
|   | - | 0.11%        |
| Effect of Experience Loss on Actuarial Assets                         |   | <u>2.98%</u> |
| July 1, 2004 Valuation 30-Year Contribution Rate                      |   | +10.45%      |

**Teachers' Retirement System**  
**A Component Unit of the State of Montana**

**Section 2**

**Scope of the Report**

This report presents the actuarial valuation of the Montana Teachers' Retirement System as of July 1, 2004.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use.

The actuarial procedures and assumptions used in this valuation are described in Appendix A. The current benefit structure, as determined by the provisions of the governing law on July 1, 2004, is summarized in Appendix B. Schedules of valuation data classifying the data used in the valuation by various categories of contributing members, former contributing members, and beneficiaries make up Appendix C. Appendix D provides a brief summary of the System's recent experience. Comparative statistics are presented on the System's membership and contribution rates. Appendix E is a glossary of actuarial terms used in this report.

**Teachers' Retirement System**  
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**Section 3**

**Assets**

In many respects, an actuarial valuation can be regarded as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is July 1, 2004. On that date, the assets available for the payment of benefits are appraised. These assets are compared with the actuarial liabilities. The actuarial process thus leads to a method of determining what contributions by members and their employers are needed to strike a balance.

The asset valuation method being used is a five-year smoothing method. The expected return is determined each year based on the beginning of year market value and actual cash flows during the year. Any difference between the expected market value return and the actual market value return is recognized evenly over a period of five years.

Table 3 summarizes the determination of the actuarial value of assets. Table 4 shows when asset gains or losses will be recognized in the actuarial value of assets. Table 5 summarizes historical asset returns since July 1, 1994 including the amount recognized by the actuarial asset valuation method which was greater or lesser than the actuarial investment return assumption.

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**Table 3**

**Determination of Actuarial Value of Assets  
July 1, 2004**

**Determination of Recognized Investment Gains and Losses - Five-Year Smoothing**

|  |                  |
|--|------------------|
| A. Expected investment return – Year Ended 6/30/2004                                     | \$ 167,963,268   |
| B. Actual investment return – Year Ended 6/30/2004                                       | \$ 279,396,768   |
| C. Gains/(losses) – 2004 [B – A]   | \$ 111,433,500   |
| D. Gains/(losses) – 2003   | \$ (37,239,499)  |
| E. Gains/(losses) – 2002   | \$ (338,875,181) |
| F. Gains/(losses) – 2001   | \$ (310,524,198) |
| G. Gains/(losses) – 2000   | \$ (3,684,142)   |
| H. Gains/(losses) recognized at July 1, 2004*<br>[1/5 C + 1/5 D + 1/5 E + 1/5 F + 1/5 G] | \$ (115,777,904) |

**Determination of Actuarial Assets**

|  |                             |
|--|-----------------------------|
| Actuarial value of assets July 1, 2003                                       | \$ 2,481,697,476            |
| Contributions less benefits  | \$ (48,186,830)             |
| Expected investment return   | 167,963,268                 |
| Recognized investment gains/(losses)   | <u>(115,777,904)</u>        |
| <b>Actuarial value of assets July 1, 2004</b>                                | <b><u>2,485,696,010</u></b> |
| Unrecognized Loss  | <u>(130,851,811)</u>        |
| Market Value of Assets July 1, 2004 (Actuarial<br>Value + Unrecognized Gain) | \$ 2,354,844,199            |

Note: The actuarial value of assets is equal to the expected value plus a five-year smoothing of market value gains and losses. The actuarial asset method was adopted for the July 1, 2000 actuarial valuation with actuarial value of assets set equal to market value of assets at July 1, 1996.

\* Includes \$0 rounding adjustment.



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**Table 4**

**Schedule of Investment Gain/(Loss) Recognition**

| Year<br>Ending<br>06/30 | Market Value<br>Investment<br>Gain/(Loss)<br>Over<br>Expected | Investment Gain/(Loss)<br>Recognized in Past Years |          |          |          | Investment<br>Gain/(Loss)<br>Recognized in<br>Current Year | Investment Gain/(Loss) to be<br>Recognized in Future Years |          |         |        |        |
|-------------------------|---|--|----------|----------|----------|--|--|----------|---------|--------|--------|
|                         |   | 2000   | 2001     | 2002     | 2003     |  | 2005   | 2006     | 2007    | 2008   |        |
|                         |   |  |          |          |          |  |  |          |         |        |        |
| 1997                    | \$166.1   | \$33.2   | \$33.2   |          |          |  |  |          |         |        |        |
| 1998                    | \$147.9   | \$29.6   | \$29.6   | \$29.6   |          |  |  |          |         |        |        |
| 1999                    | \$78.9  | \$15.8   | \$15.8   | \$15.8   | \$15.8   |  |  |          |         |        |        |
| 2000                    | (\$3.7)   | (\$0.7)  | (\$0.7)  | (\$0.7)  | (\$0.7)  |  |  |          |         |        |        |
| 2001                    | (\$310.5)   | (\$62.1)   | (\$62.1) | (\$62.1) | (\$62.1) |  |  | (\$62.1) |         |        |        |
| 2002                    | (\$338.9)   |  | (\$67.8) | (\$67.8) | (\$67.8) |  |  | (\$67.8) |         |        |        |
| 2003                    | (\$37.2)  |  |          | (\$7.4)  | (\$7.4)  |  |  | (\$7.4)  | (\$7.4) |        |        |
| 2004                    | \$111.4   |  |          |          |          |  |  | \$22.3   | \$22.3  | \$22.3 | \$22.3 |
| 2005                    | \$0.0   |  |          |          |          |  |  | \$0.0    | \$0.0   | \$0.0  | \$0.0  |
| 2006                    | \$0.0   |  |          |          |          |  |  | \$0.0    | \$0.0   | \$0.0  | \$0.0  |
| 2007                    | \$0.0   |  |          |          |          |  |  |          | \$0.0   | \$0.0  | \$0.0  |
| 2008                    | \$0.0   |  |          |          |          |  |  |          |         |        | \$0.0  |

**Total Gain/(Loss) Recognized at Each Valuation Date**

| Recognized |          | Scheduled to be Recognized* |        |
|------------|----------|-----------------------------|--------|
| \$77.8     | \$15.7   | (\$115.0)                   | \$14.8 |
|            | (\$85.3) | (\$115.8)                   | \$22.3 |

**Unrecognized Gain/(Loss) Remaining**

|           |        |        |       |
|-----------|--------|--------|-------|
| (\$130.9) | \$37.1 | \$22.3 | \$0.0 |
|-----------|--------|--------|-------|

\* The total gain/(loss) actually recognized in each future year will include additional amortizations of future gains and/or losses.



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**Table 5**

**Historical Investment Returns\***

| <b>Fiscal Year<br/>Ending</b> | <b>Market Returns</b> | <b>Actuarial Return</b> | <b>Actuarial Return<br/>Over 8.0% Assumption</b> |
|-------------------------------|-----------------------|-------------------------|--|
| June 30, 1995                 | 15.7%                 | 8.9%                    | 0.9%   |
| June 30, 1996                 | 12.4                  | 10.4                    | 2.4  |
| June 30, 1997                 | 19.4                  | 14.9                    | 6.9  |
| June 30, 1998                 | 16.6                  | 16.0                    | 8.0  |
| June 30, 1999                 | 11.9                  | 12.3                    | 4.3  |
| June 30, 2000                 | 7.8                   | 12.8                    | 4.8  |
| June 30, 2001                 | (5.1)                 | 9.2                     | 1.2  |
| June 30, 2002                 | (7.3)                 | 3.8                     | (4.2)  |
| June 30, 2003                 | 6.2                   | 1.6                     | (6.4)  |
| June 30, 2004                 | 13.3                  | 2.1                     | (5.9)  |

*\* Returns reflect all investment returns, including investment income and realized and unrealized investment gains and losses, and are net of investment expenses and administrative expenses paid by the System.*

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**Section 4**

**Actuarial Present Value of Future Benefits**

In the previous section, an actuarial valuation was related to an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, July 1, 2004. In this section, the discussion will focus on the commitments of the System, which will be referred to as its actuarial liabilities.

Table 6 contains an analysis of the actuarial present value of all future benefits for contributing members, for former contributing members, and for beneficiaries. The analysis is given by type of benefit.

The actuarial liabilities summarized in Table 6 include the actuarial present value of all future benefits expected to be paid with respect to each member covered as of the valuation date. For an active member, this value includes a measure of both benefits already earned and future benefits to be earned. Thus, for all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of their surviving beneficiaries.

The actuarial valuation does not recognize liabilities for employees who become members and participate in the System after the valuation date.

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**Table 6**

**Actuarial Present Value of Future Benefits**  
**for Contributing Members, Former Contributing**  
**Members, and Beneficiaries**  
 (All amounts are actuarial present values in millions)

|                                    | <u>July 1, 2004</u> | <u>July 1, 2002</u> |
|------------------------------------|---------------------|---------------------|
|                                    | <u>Total</u>        | <u>Total</u>        |
| A. Active members                  |                     |                     |
| Service retirement                 | \$ 1,813.3          | \$ 1,699.6          |
| Disability retirement              | 21.5                | 20.4                |
| Survivors' benefits                | 42.7                | 40.8                |
| Vested Retirement                  | 31.5                | 29.2                |
| Refund of Member Contributions     | <u>31.7</u>         | <u>32.1</u>         |
| Total                              | \$ 1,940.7          | \$ 1,822.1          |
| B. Inactive members and annuitants |                     |                     |
| Service retirement                 | \$ 1,675.1          | \$ 1,430.9          |
| Disability retirement              | 17.1                | 16.1                |
| Beneficiaries*                     | 107.2               | 90.8                |
| Vested terminated members          | 54.6                | 47.0                |
| Nonvested terminated members       | <u>11.3</u>         | <u>13.6</u>         |
| Total                              | \$ 1,865.3          | \$ 1,598.4          |
| C. Grand Total                     | \$ 3,806.0          | \$ 3,420.5          |

\* Includes survivors of active and retired members, and children's benefits.

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**Section 5**

**Employer Contributions**

In the previous two sections, attention has been focused on the assets and the present value of all future benefits of the System. A comparison of Tables 3 and 6 indicates that there is a shortfall in current actuarial assets to meet the present value of all future benefits for current members and beneficiaries. This is the universal experience in all but a fully closed-down fund where no further contributions of any sort are anticipated.

In an active system, there will always be a difference between the assets and the present value of all future benefits. This difference has to be funded with future contributions and investment returns. An actuarial valuation sets a schedule of future contributions that will deal with this funding in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. For this valuation, the entry age actuarial cost method has been used. Under this method, or essentially any actuarial cost method, the contributions required to meet the difference between current assets and the present value of all future benefits are allocated each year between two elements:

- A normal cost amount, which ideally is relatively stable as a percentage of salary over the years; and
- Whatever amount is left over, which is used to amortize what is called the unfunded actuarial accrued liability.

The two items described above, normal cost and unfunded actuarial accrued liability, are the keys to understanding the actuarial cost method. Let us first discuss the normal cost.

The normal cost is the theoretical contribution rate, which will meet the ongoing costs of a group of average new employees. Suppose that a group of new employees were covered under a separate fund from which all benefits and to which all contributions and associated investment return were to be paid. Under the entry age actuarial cost method, the normal cost contribution rate is that level percentage of pay which would be exactly right to maintain this fund on a stable basis. If experience were to follow the actuarial assumptions exactly, the fund would be completely liquidated with the last payment to the last survivor of the group.

We have determined the normal cost rates separately by type of benefit under the System. These are summarized in Table 7.

The term "fully funded" is often applied to a system where contributions for everyone at the normal cost rate will fully pay for the benefits of existing as well as new employees. Often, systems are not fully funded, either because of benefit improvements in the past that have not been completely paid for or actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists.

Table 8 shows how the UAAL was derived for the System. Lines A and B show, respectively, the total present value of future benefits and the portion of the future liability that is expected to be paid from future normal cost contributions, both employer and employee. Line C shows the actuarial accrued liability: the portion of the present value of future benefits not provided by future normal cost contributions. Line D shows the actuarial value of assets available for benefits. Line E shows the unfunded actuarial accrued liability. Lines F and G show the impact of the present value of future scheduled ORP contributions (described below) on the unfunded actuarial accrued liability.

As can be seen from this discussion, a key consideration in the adequacy of the funding of the System is how the UAAL is being amortized. Table 9 shows that the current employer and member contribution rates are adequate to pay the total normal cost rate (10.34% of pay), but do not have enough left over to amortize the UAAL over a reasonable period. Therefore, the current basis is not sufficient to meet future requirements.

An increase in the employer contribution rate of 2.87% (7.58% to 10.45%) as of July 1, 2005 is projected to maintain an amortization of the unfunded actuarial accrued liability over the 30 years beginning July 1, 2004. A 30 year amortization period is the maximum acceptable amortization period specified in Statements No. 25 and 27 of the Governmental Accounting Standards Board (GASB). It is also the trigger in the Retirement Board's funding policy for recommending to the legislature that funding be increased.

The amortization of the UAAL assumes contributions made as a percent of pay for members of the Optional Retirement Plan (ORP) until June 30, 2033. Under Section 19-20-621, periodic separate valuations are to be performed to measure the liabilities of benefits to be paid under the Teachers' Retirement System (TRS) for Montana University System (MUS) members. As of the 1996 valuation, there was a \$98.0 million difference, or shortfall, which is to be funded as a level percentage of future ORP salaries from July 1, 1997 to June 30, 2033. The single contribution rate determined as of July 1, 1997 was 3.97%. However, the following graded schedule for increasing the ORP contributions was adopted:

| ORP Contribution<br>Rate | Fiscal Years Ending            |
|--------------------------|--------------------------------|
| 2.81%                    | June 30, 1998                  |
| 3.12%                    | June 30, 1999                  |
| 3.42%                    | June 30, 2000                  |
| 3.73%                    | June 30, 2001                  |
| 4.04%                    | June 30, 2002 to June 30, 2033 |

The July 1, 2000 actuarial valuation of the MUS calculated a \$132.7 million difference or shortfall. The contribution schedule has not been changed. The value of future ORP payments included in the July 1, 2004 TRS valuation is \$115.7 million. We will be completing an updated valuation of the MUS after this report is completed.

The unfunded actuarial accrued liability at any date after establishment of a system is affected by any actuarial gains or losses arising when the actual experience of the system varies from the experience anticipated by the actuarial assumptions used in the valuations. To the extent actual experience as it develops differs from the assumptions used, so also will the actual emerging costs differ from the estimated costs. The impact of these differences in actual experience from the assumptions is included in Section I, the Summary of Findings.



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**Table 7**

**Normal Cost Contribution Rates**  
**As Percentages of Salary**

|                                | <u>July 1, 2004</u> | <u>July 1, 2002</u> |
|--------------------------------|---------------------|---------------------|
|                                | <u>Total</u>        | <u>Total</u>        |
| Service retirement             | 7.87%               | 7.86%               |
| Disability retirement          | 0.15                | 0.15                |
| Survivors' benefits            | 0.26                | 0.26                |
| Vested retirement              | 0.63                | 0.60                |
| Refund of member contributions | <u>1.43</u>         | <u>1.46</u>         |
| Total                          | 10.34%              | 10.33%              |

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**Table 8**

**Unfunded Actuarial Accrued Liability**  
(All dollar amounts in millions)

|  | <u>July 1, 2004</u> | <u>July 1, 2002</u> |
|--|---------------------|---------------------|
| A. Actuarial present value of all future benefits for present and former members and their survivors (Table 4) | \$ 3,806.0          | \$ 3,420.5          |
| B. Less actuarial present value of total future normal costs for present members                               | <u>446.8</u>        | <u>440.4</u>        |
| C. Actuarial accrued liability   | \$ 3,359.2          | \$ 2,980.1          |
| D. Less actuarial value of assets available for benefits (Table 3)   | <u>2,485.7</u>      | <u>2,484.8</u>      |
| E. Unfunded actuarial accrued liability  | \$ 873.5            | \$ 495.3            |
| F. Less present value of future ORP contributions*   | <u>115.7</u>        | <u>111.8</u>        |
| G. Unfunded actuarial accrued liability funded by TRS contributions  | \$ 757.8            | \$ 383.5            |

*\*Paid by contributions to TRS made as a percentage of the salaries of the participants in the Optional Retirement Plan (ORP). The percentage of salary will be a level 4.04% for the Fiscal Years through 2033.*

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**Table 9**

**Recommended Contribution Rates**  
**As Percentages of Salary**

|  | <u>July 1, 2004</u> | <u>July 1, 2002</u> |
|--|---------------------|---------------------|
| A. Employer contribution rate*   | 7.58%               | 7.58%               |
| B. Member contribution rate  | <u>7.15</u>         | <u>7.15</u>         |
| C. Total contribution rate   | 14.73%              | 14.73%              |
| D. Less total normal cost rate (Table 7)                               | <u>10.34</u>        | <u>10.33</u>        |
| E. Amount available to amortize unfunded actuarial accrued liability** | 4.39%               | 4.40%               |
| F. Amortization period from Valuation Date***                          | N/A                 | 23.4 years          |

\* *In accordance with MCA 19-20-604, the employer contribution rate will be reduced by 0.11% when the amortization period of the System's unfunded actuarial accrued liability is 10 years or less according to the System's latest actuarial valuation. This is reflected in all relevant calculations in this report.*

\*\* *In addition, a percentage of the salaries of the participants in the Optional Retirement Plan (ORP) is available to help amortize the unfunded actuarial accrued liability.*

\*\*\* *The amortization period as of July 1, 2002 was 23.4 years; thus, the expected period as of July 1, 2004 is 21.4 years assuming no changes in benefits or assumptions. As of July 1, 2004, the unfunded actuarial accrued liability does not amortize over a reasonable period. The employer contribution rate would have to be increased by 2.87% starting July 1, 2005 to maintain an amortization of the unfunded actuarial accrued liability over the 30-year period starting July 1, 2004. Alternatively, the employer contribution rate could be increased by 0.84% on July 1, of 2005, 2007, 2009 and 2011 for a total increase of 3.36%. This graded increase would achieve the same 30-year amortization.*

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**Section 6**

**Cash Flows**

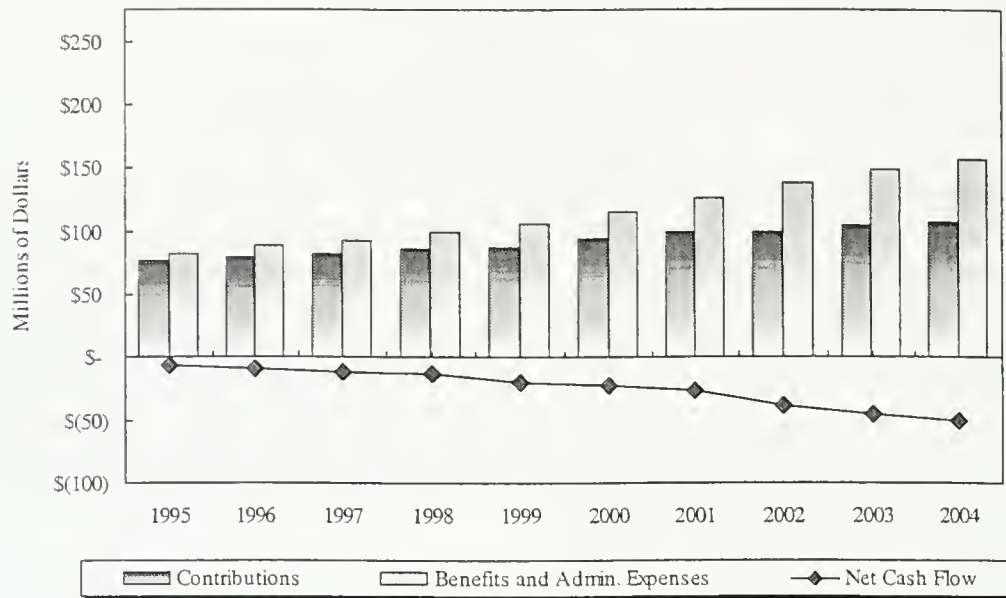
The fundamental equation for funding a retirement system is that benefits and administrative expenses must be provided for by contributions (past and future) and investment income. When a retirement system matures, benefits and administrative expenses often exceed contributions. In this case we say the system has a "negative cash flow." Mature systems are characterized by negative cash flows and large pools of assets. This is natural. Actuarial funding is designed to accumulate large pools of assets which will in turn provide investment income and finance negative cash flows when systems mature. If the fund is looked at as a whole, investment income is usually larger than the difference between contributions and benefit payments. The retirement system's investment strategy should maximize potential returns at a prudent level of risk while providing for needed cash flows.

The Table 10 shows that in 1995 the System had a small negative cash flow. In the year ended June 30, 2004 the System's benefits and administrative expenses exceeded contributions by \$50 million. At the current contribution rates this is projected to increase to \$138 million for the year ending June 30, 2014.

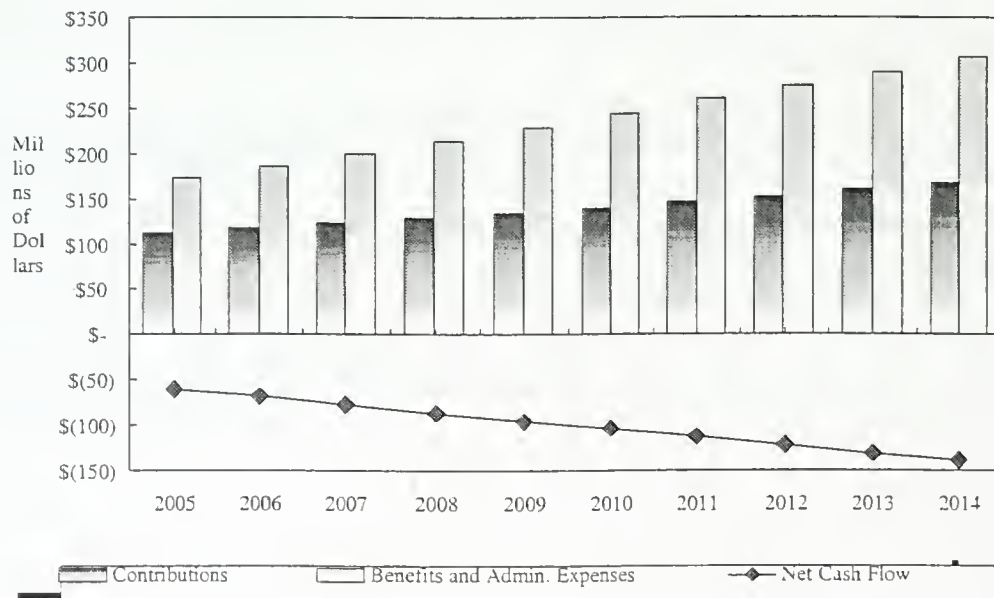
As long as the System had a positive cash flow, there was no need to plan where the funds would come from to pay benefits since benefits could be paid by incoming contributions. A negative cash flow, as defined above, requires planning what funds will be used to pay the difference between benefits and contributions. We are providing these projections to aid in developing the investment strategy for the System's assets.

The projected contributions and administrative expenses are based on the actual amounts for the year ended June 30, 2004. Contributions are assumed to increase at the general wage increase assumption of 4.5%. Expenses are assumed to increase at the underlying inflation assumption of 3.5%. The future employer contribution rate is assumed to stay at 7.58% for the purpose of these projections.

### Cash Flow History



### Cash Flow Projections



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**Table 10**

**Cash Flow History and Projections**

| Year<br>Ended<br><u>June 30,</u> | <b>Historical Cash Flows*</b> |   |                         |
|----------------------------------|-------------------------------|---|-------------------------|
|                                  | <u>Contributions</u>          | Benefits &<br>Administrative<br><u>Expenses</u> | Net<br><u>Cash Flow</u> |
|                                  |                               |   |                         |
| 1995                             | \$ 77                         | \$ 83   | \$ (6)                  |
| 1996                             | 80                            | 89  | (9)                     |
| 1997                             | 82                            | 93  | (11)                    |
| 1998                             | 87                            | 100   | (13)                    |
| 1999                             | 88                            | 107   | (19)                    |
| 2000                             | 94                            | 116   | (22)                    |
| 2001                             | 100                           | 126   | (26)                    |
| 2002                             | 100                           | 138   | (38)                    |
| 2003                             | 104                           | 149   | (45)                    |
| 2004                             | 108                           | 158   | (50)                    |

| Year<br>Ending<br><u>June 30,</u> | <b>Projected Cash Flows*</b> |   |                         |
|-----------------------------------|------------------------------|---|-------------------------|
|                                   | <u>Contributions</u>         | Benefits &<br>Administrative<br><u>Expenses</u> | Net<br><u>Cash Flow</u> |
|                                   |                              |   |                         |
| 2005                              | \$ 113                       | \$ 174  | \$ (61)                 |
| 2006                              | 118                          | 187   | (69)                    |
| 2007                              | 123                          | 200   | (77)                    |
| 2008                              | 129                          | 215   | (86)                    |
| 2009                              | 134                          | 230   | (96)                    |
| 2010                              | 141                          | 245   | (104)                   |
| 2011                              | 147                          | 260   | (113)                   |
| 2012                              | 153                          | 276   | (123)                   |
| 2013                              | 160                          | 291   | (131)                   |
| 2014                              | 168                          | 306   | (138)                   |

\* Millions of Dollars



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### **Appendix A**

#### **Actuarial Procedures and Assumptions**

The actuarial assumptions used in this valuation were adopted by the Board for the July 1, 2004 Actuarial Valuation. The Board adopted new economic assumptions at the May 14, 2004 Retirement Board Meeting. Active demographic assumptions were reviewed in the 2002 Investigation of Experience Study. Retired demographic assumptions were last reviewed in the 2000 Investigation of Experience Study.

Tables A-3 through A-6 give rates of decrement for service retirement, disablement, mortality, and other terminations of employment. These rates of decrement are referred to in actuarial literature as the absolute rate of decrement, or  $q'_x$ . Table A-7 shows the assumed probability of retaining membership in the System among members terminating with five or more years of service.

#### **Actuarial Cost Method**

The actuarial valuation was prepared using the entry age actuarial cost method. Under this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The normal cost was first calculated for each individual member. The normal cost rate is defined to equal the total of the individual normal costs, divided by the total pay rate.

The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets and (b) the actuarial present value of future normal costs is called the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is amortized as a level percentage of the projected salaries of present and future members of the System.

#### **Records and Data**

The data used in the valuation consist of financial information; records of age, sex, service, salary, contribution rates, and account balances of contributing members; and records of age, sex, and amount of benefit for retired members and beneficiaries. All of the data were supplied by the System and are accepted for valuation purposes without audit.

### **Replacement of Terminated Members**

The ages at entry and distribution by sex of future members are assumed to average the same as those of the present members they replace. If the number of active members should increase, it is further assumed that the average entry age of the larger group will be the same, from an actuarial standpoint, as that of the present group. Under these assumptions, the normal cost rates for active members will not vary with the termination of present members.

### **Employer Contributions**

At the time of this valuation, the total employer contribution rate for normal costs and amortization of the unfunded actuarial accrued liability was 7.58% of members' salaries. In accordance with MCA 19-20-604, the employer contribution rate will be reduced by 0.11% when the amortization period of the System's unfunded actuarial accrued liability is 10 years or less according to the System's latest actuarial valuation.

### **Administrative and Investment Expenses**

The administrative and investment expenses of the System are assumed to be funded by investment earnings in excess of 7.75% per year. (Adopted effective July 1, 2004)

### **Valuation of Assets - Actuarial Basis**

The actuarial asset valuation method spreads asset gains and losses over five years. The expected return is determined each year based on the beginning of year market value and actual cash flows during the year. Any difference between the expected market value return and the actual market value return is recognized evenly over a period of five years. The gains and losses are measured starting with the year ended June 30, 1997. Adopted in the July 1, 2000 actuarial valuation.

### **Investment Earnings**

The annual rate of investment earnings of the assets of the System is assumed to be 7.75% per year, compounded annually. (Adopted effective July 1, 2004)

### **Interest on Member Contributions**

Interest on member contributions is assumed to accrue at a rate of 5% per annum, compounded annually. This assumption was set as of July 1, 2004.

### **Postretirement Benefit Increases**

On January 1 of each year, the retirement allowance payable must be increased by 1.5% if the retiree's most recent retirement effective date is at least 36 months prior to January 1 of the year in which the adjustment is to be made.

### **Future Salaries**

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table A-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 4.5% annual rate of increase in the general wage level of the membership. The merit and longevity increases for the MUS members did not show a pattern of increasing or decreasing with service at the time of our most recent study. Therefore, the MUS members have a flat 1% merit and longevity assumption. The general wage increase assumption was adopted July 1, 2004 and the merit and longevity scales were adopted July 1, 2002.

Montana University System (MUS) members are assumed to have a 0.63% higher average final compensation to account for the larger than average annual compensation increases observed in the years immediately preceding retirement.

### **Service Retirement**

Table A-3 shows the annual assumed rates of retirement among members eligible for service retirement. Separate rates are used when a member is eligible for reduced benefits, for the first year a member is eligible for full benefits, and for the years following the first year a member is eligible for full benefits. The rates for General Members were adopted July 1, 2002. The rates for University Members were adopted July 1, 2002.

### **Disablement**

The rates of disablement used in this valuation are illustrated in Table A-4. The rates for General Members were adopted July 1, 2002. The rates for University Members were adopted July 1, 1996.

### **Mortality**

The mortality rates used in this valuation are illustrated in Table A-5. A written description of each table used is included in Table A-1. These rates were adopted July 1, 2000.

### **Other Terminations of Employment**

The rates of assumed future withdrawal from active service for reasons other than death, disability or retirement are shown for representative ages in Table A-6. These rates were adopted July 1, 2002.

### **Benefits for Terminating Members**

Members terminating with less than five years of service are assumed to request an immediate withdrawal of their contributions with interest. Table A-7 shows the assumed probability of retaining membership in the System among members terminating with five or more years of service. These rates were adopted July 1, 2002.

We estimated the present value of future benefits for terminated vested members based on their available contribution account.

**Part-Time Employees**

The valuation data for active members identify part-time members, but give no indication as to the number of hours worked. As done in the past, we imputed a "part-time percentage" by comparing the pay received with their annual equivalent full-time salary. Part-time members earning less than \$1,000 during the last year were valued at their current member contribution balance.

**Optional Retirement Program**

The total contribution received for the fiscal year ending June 30, 2004 was \$4,673,484. Based on a contribution rate of 4.04%, we assumed the total ORP payroll for the fiscal year to be \$115,680,297 (\$4,673,484 divided by 4.04%).

**Buybacks, Purchase of Service, and Military Service**

The active liabilities and normal cost were increased to 100.5% of their original value to fund this additional service based on a study of the System's experience for the five calendar years 1995 through 1999. Effective July 1, 2000.

**Probability of Marriage**

If death occurs in active status, all members are assumed to have an eligible surviving spouse and two children. The spouse is assumed to be the same age as the member.

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**Table A-1**

**Summary of Valuation Assumptions**  
*(July 1, 2004)*

|                                    |   |           |
|------------------------------------|---|-----------|
| <b>I. Economic assumptions</b>     |   |           |
| A.                                 | General wage increases* (Adopted July 1, 2004)  | 4.50%     |
| B.                                 | Investment return (Adopted July 1, 2004)  | 7.75%     |
| C.                                 | Price Inflation Assumption (Adopted July 1, 2004)   | 3.50%     |
| D.                                 | Growth in membership  | 0.00%     |
| E.                                 | Postretirement benefit increases<br>(Starting three years after retirement)   | 1.50%     |
| F.                                 | Interest on member accounts (Adopted July 1, 2004)  | 5.00%     |
| <b>II. Demographic assumptions</b> |   |           |
| A.                                 | Individual salary increase due to promotion and longevity<br>(General Member assumptions adopted July 1, 2002)<br>(University Member assumptions adopted July 1, 2000)  | Table A-2 |
| B.                                 | Retirement<br>(adopted July 1, 2002)  | Table A-3 |
| C.                                 | Disablement (adopted July 1, 2002)<br>(General Member assumptions adopted July 1, 2002)<br>(University Member assumptions adopted July 1, 1996)   | Table A-4 |
| D.                                 | Mortality among contributing members, service retired<br>members, and beneficiaries<br>1994 Group Annuity Mortality Table, with ages set back 3<br>years for males and ages set back 1 year for females.<br>(adopted July 1, 2000)  | Table A-5 |
| E.                                 | Mortality among disabled members<br>Based on the IRS Social Security Disabled Mortality Tables<br>published in Revenue Ruling 96-7.<br>Males are 70% of the Male IRS table to age 80, grading into<br>the 1983 Group Annuity Mortality Table for Males between<br>ages 80 and 85. Females are 85% of the IRS table at all<br>ages. (adopted July 1, 2000) | Table A-5 |
| F.                                 | Other terminations of employment (adopted July 1, 2002)   | Table A-6 |
| G.                                 | Probability of retaining membership in the System upon vested<br>termination (adopted July 1, 2002)   | Table A-7 |

\* *Montana University System (MUS) members are assumed to have a 0.63% higher average final compensation to account for the larger than average annual compensation increases observed in the years immediately preceding retirement.*



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**Table A-2**

**Future Salaries**

| Years of<br>Service | General<br>Members                 |                             |                             | University<br>Members              |                             |                             |
|---------------------|------------------------------------|-----------------------------|-----------------------------|------------------------------------|-----------------------------|-----------------------------|
|                     | Individual<br>Merit &<br>Longevity | General<br>Wage<br>Increase | Total<br>Salary<br>Increase | Individual<br>Merit &<br>Longevity | General<br>Wage<br>Increase | Total<br>Salary<br>Increase |
| 1                   | 4.51%                              | 4.50%                       | 9.01%                       | 1.00%                              | 4.50%                       | 5.50%                       |
| 2                   | 4.09                               | 4.50                        | 8.59                        | 1.00                               | 4.50                        | 5.50                        |
| 3                   | 3.46                               | 4.50                        | 7.96                        | 1.00                               | 4.50                        | 5.50                        |
| 4                   | 2.94                               | 4.50                        | 7.44                        | 1.00                               | 4.50                        | 5.50                        |
| 5                   | 2.52                               | 4.50                        | 7.02                        | 1.00                               | 4.50                        | 5.50                        |
| 6                   | 2.21                               | 4.50                        | 6.71                        | 1.00                               | 4.50                        | 5.50                        |
| 7                   | 1.89                               | 4.50                        | 6.39                        | 1.00                               | 4.50                        | 5.50                        |
| 8                   | 1.68                               | 4.50                        | 6.18                        | 1.00                               | 4.50                        | 5.50                        |
| 9                   | 1.47                               | 4.50                        | 5.97                        | 1.00                               | 4.50                        | 5.50                        |
| 10                  | 1.31                               | 4.50                        | 5.81                        | 1.00                               | 4.50                        | 5.50                        |
| 11                  | 1.16                               | 4.50                        | 5.66                        | 1.00                               | 4.50                        | 5.50                        |
| 12                  | 1.00                               | 4.50                        | 5.50                        | 1.00                               | 4.50                        | 5.50                        |
| 13                  | 0.84                               | 4.50                        | 5.34                        | 1.00                               | 4.50                        | 5.50                        |
| 14                  | 0.68                               | 4.50                        | 5.18                        | 1.00                               | 4.50                        | 5.50                        |
| 15                  | 0.58                               | 4.50                        | 5.08                        | 1.00                               | 4.50                        | 5.50                        |
| 16                  | 0.47                               | 4.50                        | 4.97                        | 1.00                               | 4.50                        | 5.50                        |
| 17                  | 0.37                               | 4.50                        | 4.87                        | 1.00                               | 4.50                        | 5.50                        |
| 18                  | 0.26                               | 4.50                        | 4.76                        | 1.00                               | 4.50                        | 5.50                        |
| 19                  | 0.21                               | 4.50                        | 4.71                        | 1.00                               | 4.50                        | 5.50                        |
| 20                  | 0.16                               | 4.50                        | 4.66                        | 1.00                               | 4.50                        | 5.50                        |
| 21                  | 0.11                               | 4.50                        | 4.61                        | 1.00                               | 4.50                        | 5.50                        |
| 22 & Up             | 0.00                               | 4.50                        | 4.50                        | 1.00                               | 4.50                        | 5.50                        |



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**Table A-3**

**Retirement  
Annual Rates**

| Age | General Members                        |  |            | University Members                     |  |            |
|-----|--|--|------------|--|--|------------|
|     | Eligible<br>for<br>Reduced<br>Benefits | First Year<br>Eligible for<br>Full<br>Benefits | Thereafter | Eligible<br>for<br>Reduced<br>Benefits | First Year<br>Eligible for<br>Full<br>Benefits | Thereafter |
| 45  |  | 18.0%  | 9.5%       |  | 5.0%   | 4.9%       |
| 46  |  | 18.0   | 9.5        |  | 5.0  | 4.9        |
| 47  |  | 12.5   | 9.5        |  | 5.0  | 4.9        |
| 48  |  | 12.5   | 9.5        |  | 5.0  | 4.9        |
| 49  | *                                      | 12.5   | 9.5        | *                                      | 5.0  | 4.9        |
| 50  | 4.0%                                   | 12.5   | 9.5        | 1.9%                                   | 8.0  | 4.9        |
| 51  | 4.0                                    | 16.0   | 9.5        | 2.2                                    | 8.0  | 4.9        |
| 52  | 4.5                                    | 16.0   | 9.5        | 2.5                                    | 8.0  | 6.0        |
| 53  | 4.5                                    | 16.0   | 9.5        | 2.8                                    | 8.0  | 6.0        |
| 54  | 5.0                                    | 16.0   | 9.5        | 3.1                                    | 12.0   | 6.0        |
| 55  | 5.5                                    | 22.0   | 14.0       | 3.4                                    | 15.0   | 6.0        |
| 56  | 6.0                                    | 22.0   | 14.0       | 3.7                                    | 15.0   | 6.0        |
| 57  | 6.5                                    | 22.0   | 14.0       | 4.0                                    | 15.0   | 7.0        |
| 58  | 6.5                                    | 22.0   | 15.0       | 4.3                                    | 15.0   | 7.0        |
| 59  | 7.0                                    | 22.0   | 18.0       | 4.7                                    | 15.0   | 9.0        |
| 60  | *                                      | 22.0   | 22.0       | *                                      | 19.0   | 10.0       |
| 61  |  | 22.0   | 22.0       |  | 19.0   | 14.0       |
| 62  |  | 27.0   | 27.0       |  | 24.0   | 24.0       |
| 63  |  | 22.0   | 22.0       |  | 14.0   | 14.0       |
| 64  |  | 25.0   | 25.0       |  | 20.0   | 20.0       |
| 65  |  | 35.0   | 35.0       |  | 33.0   | 33.0       |
| 66  |  | 30.0   | 30.0       |  | 23.0   | 23.0       |
| 67  |  | 24.0   | 24.0       |  | 23.0   | 23.0       |
| 68  |  | 22.0   | 22.0       |  | 23.0   | 23.0       |
| 69  |  | 22.0   | 22.0       |  | 23.0   | 23.0       |
| 70  |  | **   | **         |  | **   | **         |

\* All benefits are unreduced after attaining age 60. Reduced benefits are not available before age 50.

\*\* Immediate retirement is assumed at age 70 or over.

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Table A-4

Disablement  
Annual Rates

| Age | General Members | University Members |
|-----|-----------------|--------------------|
| 25  | .010%           | .003%              |
| 30  | .010            | .006               |
| 35  | .020            | .012               |
| 40  | .040            | .021               |
| 45  | .080            | .036               |
| 50  | .130            | .055               |
| 55  | .180            | .083               |
| 60  | .260            | .126               |

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**Table A-5**

**Mortality**  
**Annual Rates**

| Age | Contributing Members, Service<br>Retired Members and<br>Beneficiaries |       | Disabled Members |       |
|-----|---|-------|------------------|-------|
|     | Men   | Women | Men              | Women |
| 25  | .06%  | .03%  | 1.92%            | 1.02% |
| 30  | .07   | .03   | 2.15             | 1.26  |
| 35  | .08   | .04   | 2.39             | 1.50  |
| 40  | .09   | .07   | 2.69             | 1.75  |
| 45  | .13   | .09   | 3.01             | 2.04  |
| 50  | .19   | .13   | 3.36             | 2.38  |
| 55  | .32   | .21   | 3.72             | 2.77  |
| 60  | .56   | .39   | 4.07             | 3.23  |
| 65  | 1.01  | .76   | 4.46             | 3.76  |
| 70  | 1.80  | 1.27  | 5.13             | 4.36  |
| 75  | 2.85  | 2.04  | 6.22             | 5.32  |
| 80  | 4.52  | 3.54  | 7.50             | 6.84  |
| 85  | 7.55  | 6.10  | 11.48            | 9.30  |

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**Table A-6**

**Other Terminations of Employment**  
**Among Members Not Eligible to Retire**  
**Annual Rates**

| Years of<br>Service | General<br>Members | University<br>Members |
|---------------------|--------------------|-----------------------|
| 1                   | 30.0%              | 33.0%                 |
| 2                   | 16.0               | 17.0                  |
| 3                   | 11.0               | 13.0                  |
| 4                   | 9.0                | 11.0                  |
| 5                   | 8.0                | 9.0                   |
| 6                   | 7.7                | 8.3                   |
| 7                   | 7.3                | 7.7                   |
| 8                   | 7.0                | 7.0                   |
| 9                   | 6.6                | 6.6                   |
| 10                  | 6.2                | 6.2                   |
| 11                  | 5.8                | 5.8                   |
| 12                  | 5.4                | 5.4                   |
| 13                  | 5.0                | 5.0                   |
| 14                  | 4.6                | 4.6                   |
| 15                  | 4.2                | 4.2                   |
| 16                  | 3.8                | 3.8                   |
| 17                  | 3.4                | 3.4                   |
| 18 and up           | 3.0                | 3.0                   |

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**Table A-7**

**Probability of Retaining Membership in the System  
Upon Vested Termination**

| <u>Age</u> | <u>Probability of<br/>Retaining Membership</u> |
|------------|--|
| 25         | 54%  |
| 30         | 54   |
| 35         | 58   |
| 40         | 58   |
| 45         | 60   |
| 50         | 70   |
| 55         | 75   |

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**Appendix B**

**Summary of Benefit Provisions**

|                            |   |
|----------------------------|---|
| Effective Date             | September 1, 1937   |
| Vesting Period             | 5 years. No benefits are payable unless the member has a vested right, except the return of employee contributions with interest.   |
| Final Compensation         | Average of highest 3 consecutive years of earned compensation.  |
| Normal Form of Benefits    | Life only annuity. All benefits cease upon death; however, in no event will the member receive less than the amount of employee contributions with interest.  |
| Normal Retirement Benefits |   |
| Eligibility:               | 25 years of service or age 60 and 5 years of service.   |
| Benefit:                   | The retirement benefit is equal to 1/60 of final compensation for each year of service.   |
| Early Retirement Benefits  |   |
| Eligibility:               | 5 years of service and age 50.  |
| Benefit:                   | The retirement benefit is calculated in the same manner as described for normal retirement, but the benefit is reduced 1/2 of 1% for each of the first 60 months early and 3/10 of 1% for each of the next 60 months early. |

## Death Benefit

Eligibility: 5 years of service.

Benefit: The death benefit is equal to 1/60 of final compensation for each year of service accrued at date of death, with an actuarial adjustment based on the relation of the member's age at death to the beneficiary's age. A monthly benefit of \$200 is paid to each child until age 18. In addition, a lump-sum benefit of \$500 is paid upon the death of an active or retired member.

## Disability Benefit

Eligibility: 5 years of service.

Benefit: The disability benefit is equal to 1/60 of final compensation for each year of service accrued at date of disability. The minimum benefit is 1/4 of the final compensation.

## Withdrawal Benefits

With less than 5 years of service, the accumulated employee contributions with interest are returned. With more than 5 years, the member may elect a refund of contributions with interest or leave the contributions and interest in the System and retain a vested right to retirement benefits.

## Contributions

Member: 7.15% of compensation.  
Employer: 7.58% of compensation.

MCA 19-20-604 specifies that the employer contribution rate will be reduced by 0.11% when the amortization period of the System's unfunded actuarial accrued liability is 10 years or less according to the System's latest actuarial valuation.

## Interest on Member Contributions

Interest on member contributions is currently being credited at a rate of 4.0% per annum.

## Cost-of-Living Adjustments

On January 1 of each year, the retirement allowance payable must be increased by 1.5% if the retiree's most recent retirement effective date is at least 36 months prior to January 1 of the year in which the adjustment is to be made.



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**Appendix C**

**Valuation Data**

This valuation is based upon the membership of the System as of July 1, 2004. Membership data were supplied by the System and accepted for valuation purposes without audit. However, tests were performed to ensure that the data are sufficiently accurate for valuation purposes.

Table C-1 contains summaries of the data for contributing members. For full-time members, values shown in the tables are the numbers of members and their total and average annual salaries. For part-time members, only the numbers of members are shown.

| Active Members   | Number       | Annual Salaries<br>in Millions |
|--|--------------|--------------------------------|
| Full-Time Members  | 12,601       | \$ 510.8                       |
| Part-Time Members*   | <u>5,013</u> | <u>60.3</u>                    |
| Total Contributing Members*                                  | 17,614       | \$ 571.2                       |
| Active Members with<br>Annual Compensation less than \$1,000 | <u>637</u>   |                                |
| Total Active Members   | 18,251       |                                |

\* Excludes part-time members with annual compensation less than \$1,000.

Table C-2 presents distributions of the following:

- Members receiving service retirement benefits.
- Members receiving disability retirement benefits.
- Survivors of deceased retired members receiving benefits.
- Survivors of deceased active members.
- Child beneficiaries.
- Terminated vested members.

Table C-3 is a reconciliation of membership data from July 1, 2002 to July 1, 2004.

The following is a summary of retired members and beneficiaries currently receiving benefits:

| Type of Annuitant                                 | Number     | Annual Benefits<br>in Thousands | Average Annual<br>Benefits |
|---|------------|---------------------------------|----------------------------|
| Service Retirement                                | 8,969      | \$ 146,841                      | \$ 16,372                  |
| Survivors of Deceased Retired<br>Members          | <u>772</u> | <u>7,963</u>                    | <u>10,315</u>              |
| Total Service Retirement<br>(including survivors) | 9,741      | 154,804                         | 15,892                     |
| Disability Retirement                             | 199        | 1,686                           | 8,471                      |
| Survivors of Deceased Active<br>Members           | 407        | 3,219                           | 7,909                      |
| Child Beneficiaries                               | <u>28</u>  | <u>67</u>                       | <u>2,400</u>               |
| Total Annuitants                                  | 10,375     | \$ 159,776                      | \$ 15,400                  |

| Terminated Members with<br>Contributions Not Withdrawn* | Number       |
|---|--------------|
| Vested Terminated Members                               | 1,620        |
| Non-Vested Terminated Members                           | <u>7,861</u> |
| Total Terminated Members                                | 9,481        |

\* Includes 209 records provided in the active data with salary equal to zero and contributions greater than zero.

### Table C-1

as of July 1, 2004

## Completed Years of Service

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**Table C-1**

**Active Members Distribution of  
Full-Time Employees and Salaries  
as of July 1, 2004**

**Annual Salaries in Thousands - By Age Group - All Members**

| Age       | Completed Years of Service |        |        |        |        |          |          |          |          |          |          |       | Totals  |
|-----------|----------------------------|--------|--------|--------|--------|----------|----------|----------|----------|----------|----------|-------|---------|
|           | 0                          | 1      | 2      | 3 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40+   |         |
| <25       | 208                        | 1,470  | 409    | 24     | -      | -        | -        | -        | -        | -        | -        | -     | 2,111   |
| 25 to 29  | 168                        | 5,736  | 6,027  | 9,105  | 3,701  | -        | -        | -        | -        | -        | -        | -     | 24,737  |
| 30 to 34  | 117                        | 2,422  | 3,355  | 6,949  | 19,887 | 4,003    | -        | -        | -        | -        | -        | -     | 36,733  |
| 35 to 39  | 142                        | 2,148  | 1,986  | 3,963  | 12,703 | 20,700   | 3,770    | -        | -        | -        | -        | -     | 45,412  |
| 40 to 44  | 186                        | 2,127  | 1,577  | 4,053  | 10,449 | 15,884   | 19,739   | 6,474    | -        | -        | -        | -     | 60,489  |
| 45 to 49  | 247                        | 1,579  | 1,672  | 4,168  | 9,640  | 16,192   | 19,169   | 27,286   | 7,790    | -        | -        | -     | 87,743  |
| 50 to 54  | 155                        | 1,325  | 1,878  | 3,256  | 10,138 | 14,686   | 18,950   | 24,604   | 29,915   | 10,578   | -        | -     | 115,485 |
| 55 to 59  | 110                        | 1,210  | 744    | 1,757  | 5,790  | 10,454   | 13,264   | 16,286   | 18,255   | 23,765   | 3,828    | -     | 95,463  |
| 60 to 64  | 31                         | 249    | 489    | 646    | 2,156  | 2,566    | 3,853    | 4,586    | 6,182    | 7,380    | 6,114    | 592   | 34,844  |
| 65 to 69  | 17                         | 49     | -      | 92     | 320    | 509      | 975      | 1,004    | 484      | 986      | 1,576    | 716   | 6,728   |
| 70 and up | -                          | 45     | -      | 48     | 39     | 35       | 64       | 214      | 166      | 246      | 162      | 44    | 1,063   |
| Totals    | 1,381                      | 18,360 | 18,137 | 34,061 | 74,823 | 85,029   | 79,784   | 80,454   | 62,792   | 42,955   | 11,680   | 1,352 | 510,808 |

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**Table C-1**

**Active Members Distribution of  
Full-Time Employees and Salaries  
*as of July 1, 2004***

**Average Annual Salary - By Age Group - All Members**

| Age       | Completed Years of Service |        |        |        |        |          |          |          |          |          |          | Totals |
|-----------|----------------------------|--------|--------|--------|--------|----------|----------|----------|----------|----------|----------|--------|
|           | 0                          | 1      | 2      | 3 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40+    |
| <25       | 12,215                     | 23,706 | 24,038 | 24,370 | -      | -        | -        | -        | -        | -        | -        | -      |
| 25 to 29  | 12,955                     | 25,381 | 26,204 | 26,939 | 29,847 | -        | -        | -        | -        | -        | -        | -      |
| 30 to 34  | 9,755                      | 26,327 | 28,436 | 29,077 | 32,496 | 37,764   | -        | -        | -        | -        | -        | -      |
| 35 to 39  | 10,127                     | 27,900 | 29,648 | 29,576 | 33,696 | 39,354   | 43,333   | -        | -        | -        | -        | -      |
| 40 to 44  | 12,420                     | 28,361 | 25,849 | 30,702 | 34,713 | 40,729   | 44,761   | -        | -        | -        | -        | -      |
| 45 to 49  | 12,989                     | 28,194 | 28,835 | 32,818 | 33,824 | 41,412   | 45,209   | 45,272   | -        | -        | -        | -      |
| 50 to 54  | 15,499                     | 29,443 | 31,301 | 32,238 | 36,077 | 40,907   | 45,118   | 48,149   | 47,793   | 49,664   | -        | -      |
| 55 to 59  | 11,042                     | 32,697 | 32,367 | 37,380 | 37,354 | 41,322   | 46,215   | 51,538   | 53,221   | 52,462   | 50,366   | -      |
| 60 to 64  | 15,252                     | 27,710 | 37,581 | 35,907 | 40,676 | 39,477   | 46,985   | 49,308   | 51,947   | 55,490   | 56,092   | 49,298 |
| 65 to 69  | 17,385                     | 24,436 | -      | 45,977 | 35,544 | 42,385   | 51,312   | 59,069   | 60,553   | 54,768   | 65,672   | 79,550 |
| 70 and up | -                          | 22,353 | -      | 15,975 | 19,696 | 17,385   | 32,199   | 71,412   | 55,494   | 61,423   | 54,023   | 43,649 |
| Totals    | 12,224                     | 26,881 | 28,034 | 29,827 | 34,026 | 40,413   | 45,280   | 48,613   | 50,598   | 52,321   | 55,094   | 61,417 |
|           |                            |        |        |        |        |          |          |          |          |          |          | 40,537 |

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**Table C-1**

**Active Members Distribution of  
Part-Time Employees and Salaries  
as of July 1, 2004**

**Number of Employees - By Age Group - All Members**

| Age       | Completed Years of Service |     |     |        |        |          |          |          |          |          |          | Totals |       |
|-----------|----------------------------|-----|-----|--------|--------|----------|----------|----------|----------|----------|----------|--------|-------|
|           | 0                          | 1   | 2   | 3 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 |        | 40+   |
| <25       | 137                        | 26  | 15  | 7      | 1      | -        | -        | -        | -        | -        | -        | -      | 186   |
| 25 to 29  | 201                        | 135 | 48  | 59     | 10     | -        | -        | -        | -        | -        | -        | -      | 453   |
| 30 to 34  | 85                         | 80  | 52  | 78     | 128    | 20       | -        | -        | -        | -        | -        | -      | 443   |
| 35 to 39  | 106                        | 100 | 55  | 87     | 81     | 77       | 11       | -        | -        | -        | -        | -      | 517   |
| 40 to 44  | 108                        | 106 | 95  | 148    | 161    | 59       | 53       | 11       | 1        | -        | -        | -      | 742   |
| 45 to 49  | 96                         | 107 | 98  | 150    | 218    | 109      | 47       | 44       | 4        | -        | -        | -      | 873   |
| 50 to 54  | 81                         | 108 | 87  | 101    | 221    | 129      | 68       | 35       | 26       | 3        | -        | -      | 859   |
| 55 to 59  | 42                         | 74  | 41  | 56     | 105    | 98       | 52       | 21       | 12       | 29       | -        | -      | 530   |
| 60 to 64  | 35                         | 29  | 30  | 30     | 49     | 37       | 19       | 16       | 11       | 7        | 7        | 1      | 271   |
| 65 to 69  | 7                          | 5   | 20  | 16     | 19     | 16       | 5        | 3        | 1        | 3        | 4        | -      | 99    |
| 70 and up | 3                          | 7   | 3   | 4      | 11     | 4        | 7        | 1        | -        | -        | -        | -      | 40    |
| Totals    | 901                        | 777 | 544 | 736    | 1,004  | 549      | 262      | 131      | 55       | 42       | 11       | 1      | 5,013 |



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**Table C-2**

**Distribution of Inactive Lives**

**Members Receiving Service Retirement Benefits as of July 1, 2004**

| <u>Age</u> | <u>Number of Persons</u> |    | <u>Annual Benefits<br/>in Thousands</u> |    | <u>Average<br/>Annual Benefits</u> |
|------------|--------------------------|----|---|----|------------------------------------|
| <50        | 28                       | \$ | 532                                     | \$ | 19,016                             |
| 50 to 54   | 430                      |    | 8,185                                   |    | 19,035                             |
| 55 to 59   | 1,251                    |    | 24,738                                  |    | 19,775                             |
| 60 to 64   | 1,798                    |    | 34,885                                  |    | 19,402                             |
| 65 to 69   | 1,606                    |    | 29,418                                  |    | 18,317                             |
| 70 to 74   | 1,317                    |    | 21,728                                  |    | 16,498                             |
| 75 to 79   | 934                      |    | 12,728                                  |    | 13,627                             |
| 80 to 84   | 689                      |    | 7,738                                   |    | 11,231                             |
| 85 to 89   | 501                      |    | 4,226                                   |    | 8,435                              |
| 90 and up  | 415                      |    | 2,664                                   |    | 6,420                              |
| Total      | 8,969                    |    | 146,841                                 |    | 16,372                             |

**Members Receiving Disability Retirement Benefits as of July 1, 2004**

| <u>Age</u> | <u>Number of Persons</u> |    | <u>Annual Benefits<br/>in Thousands</u> |    | <u>Average<br/>Annual Benefits</u> |
|------------|--------------------------|----|---|----|------------------------------------|
| <50        | 12                       | \$ | 97                                      | \$ | 8,121                              |
| 50 to 54   | 27                       |    | 218                                     |    | 8,077                              |
| 55 to 59   | 38                       |    | 361                                     |    | 9,505                              |
| 60 to 64   | 32                       |    | 297                                     |    | 9,285                              |
| 65 to 69   | 27                       |    | 257                                     |    | 9,511                              |
| 70 to 74   | 18                       |    | 161                                     |    | 8,937                              |
| 75 to 79   | 20                       |    | 154                                     |    | 7,698                              |
| 80 to 84   | 13                       |    | 73                                      |    | 5,632                              |
| 85 to 89   | 10                       |    | 58                                      |    | 5,798                              |
| 90 and up  | 2                        |    | 9                                       |    | 4,506                              |
| Total      | 199                      |    | 1,686                                   |    | 8,471                              |

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**Table C-2**

**Distribution of Inactive**

**Survivors of Deceased Retired Members as of July 1, 2004**

| <u>Age</u> | <u>Number of Persons</u> |    | <u>Annual Benefits<br/>in Thousands</u> |    | <u>Average<br/>Annual Benefits</u> |
|------------|--------------------------|----|---|----|------------------------------------|
| <50        | 30                       | \$ | 249                                     | \$ | 8,291                              |
| 50 to 54   | 25                       |    | 232                                     |    | 9,275                              |
| 55 to 59   | 40                       |    | 450                                     |    | 11,241                             |
| 60 to 64   | 66                       |    | 836                                     |    | 12,667                             |
| 65 to 69   | 80                       |    | 921                                     |    | 11,509                             |
| 70 to 74   | 109                      |    | 1,395                                   |    | 12,799                             |
| 75 to 79   | 106                      |    | 1,167                                   |    | 11,011                             |
| 80 to 84   | 150                      |    | 1,393                                   |    | 9,290                              |
| 85 to 89   | 102                      |    | 869                                     |    | 8,517                              |
| 90 and up  | 64                       |    | 452                                     |    | 7,063                              |
| Total      | 772                      |    | 7,963                                   |    | 10,315                             |

**Survivors of Deceased Active Members as of July 1, 2004**

| <u>Age</u> | <u>Number of Persons</u> |    | <u>Annual Benefits<br/>in Thousands</u> |    | <u>Average<br/>Annual Benefits</u> |
|------------|--------------------------|----|---|----|------------------------------------|
| <50        | 78                       | \$ | 423                                     | \$ | 5,418                              |
| 50 to 54   | 43                       |    | 334                                     |    | 7,770                              |
| 55 to 59   | 55                       |    | 459                                     |    | 8,343                              |
| 60 to 64   | 49                       |    | 523                                     |    | 10,668                             |
| 65 to 69   | 38                       |    | 337                                     |    | 8,869                              |
| 70 to 74   | 38                       |    | 378                                     |    | 9,941                              |
| 75 to 79   | 36                       |    | 343                                     |    | 9,522                              |
| 80 to 84   | 38                       |    | 282                                     |    | 7,416                              |
| 85 to 89   | 16                       |    | 80                                      |    | 4,972                              |
| 90 and up  | 16                       |    | 62                                      |    | 3,844                              |
| Total      | 407                      |    | 3,219                                   |    | 7,909                              |

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**Table C-2**

**Distribution of Inactive Lives**

**Terminated Vested Members as of July 1, 2004**  
**Number of Persons**

| Age        | Number |
|------------|--------|
| <25        | -      |
| 25 to 29   | 6      |
| 30 to 34   | 81     |
| 35 to 39   | 157    |
| 40 to 44   | 203    |
| 45 to 49   | 311    |
| 50 to 54   | 393    |
| 55 to 69   | 334    |
| 60 to 64   | 111    |
| 65 to 69   | 20     |
| 70 & above | 4      |
| Total      | 1,620  |

**Child Beneficiaries as of July 1, 2004**  
**Number of Persons**

| Age      | Number |
|----------|--------|
| <5       | 2      |
| 5 to 6   | 2      |
| 7 to 8   | 2      |
| 9 to 10  | 7      |
| 11 to 12 | 3      |
| 13 to 14 | 6      |
| 15 to 16 | 6      |
| 17 to 18 | -      |
| Total    | 28     |

**Teachers' Retirement System**  
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**Table C-3**

**Data Reconciliation**

|                                    | Active<br>Contributing<br><u>Members</u> | Vested<br>Terminated<br><u>Members</u> | Service<br>Retired<br><u>Members</u> | Disabled<br><u>Members</u> | Survivors<br>and<br><u>Beneficiaries</u> |
|------------------------------------|--|--|--------------------------------------|----------------------------|--|
| July 1, 2002 Valuation             | 17,446                                   | 1,485                                  | 8,438                                | 200                        | 1,130                                    |
| Refunds and NonVested Terminations | (1,864)                                  | (112)                                  |                                      |                            |  |
| Vested Terminations                | (413)                                    | 413                                    |                                      |                            |  |
| Service Retirements                | (887)                                    | (90)                                   | 977                                  |                            |  |
| Disability Retirements             | (15)                                     | (1)                                    |                                      | 16                         |  |
| Deaths with Beneficiary            | (21)                                     | (3)                                    | (151)                                | (8)                        | 183                                      |
| Deaths without Beneficiary         |  |  | (331)                                | (10)                       | (96)                                     |
| New Entrants                       | 3,254                                    |  |                                      |                            |  |
| Rehires                            | 114                                      | (95)                                   | (18)                                 | (1)                        |  |
| Other                              | <u>-</u>                                 | <u>23</u>                              | <u>54</u>                            | <u>2</u>                   | <u>(10)</u>                              |
| July 1, 2004 Valuation             | 17,614                                   | 1,620                                  | 8,969                                | 199                        | 1,207                                    |

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**Appendix D**

**Comparative Schedules**

This section contains tables that summarize the experience of the System shown in present and past valuation reports.

Table D-1 shows a summary of the active members covered as of the various valuation dates.

Table D-2 shows a summary of the retired and inactive members as of the various valuation dates.

Table D-3 summarizes the contribution rates determined by each annual actuarial valuation.

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**Table D-1  
Active Membership Data**

| Valuation Date<br>(July 1) | Active Members    |                     |                              |   |  |                                 |               |                            |                    |
|----------------------------|-------------------|---------------------|------------------------------|---|--|---------------------------------|---------------|----------------------------|--------------------|
|                            | Full-Time Members | Part-Time Members** | Total Contributing Members** | Part-Time Members Annual Compensation less than \$1,000 | Annual Full-Time Salaries in Thousands | Average Full-Time Annual Salary | Average Age** | Average Years of Service** | Average Hire Age** |
|                            |                   |                     |                              |   |  |                                 |               |                            |                    |
| 1987                       | 13,105            | 1,955               | 15,060                       | *   | \$340,481                              | \$25,981                        | *             | *                          | *                  |
| 1989                       | 12,546            | 2,541               | 15,087                       | *   | 339,866                                | 27,090                          | *             | *                          | *                  |
| 1992                       | 13,502            | 3,141               | 16,643                       | *   | 401,092                                | 29,706                          | 42.4          | 11.6                       | 30.8               |
| 1994                       | 14,938            | 2,637               | 17,575                       | 377   | 416,968                                | 27,914                          | 42.5          | 11.0                       | 31.5               |
| 1996                       | 13,251            | 5,444               | 18,695                       | 1,295   | 424,085                                | 32,004                          | 43.3          | 11.6                       | 31.7               |
| 1998                       | 13,545            | 4,647               | 18,192                       | 776   | 459,191                                | 33,901                          | 44.0          | 12.1                       | 31.9               |
| 2000                       | 13,289            | 4,245               | 17,534                       | 886   | 477,160                                | 35,906                          | 44.5          | 12.2                       | 32.3               |
| 2002                       | 12,796            | 4,650               | 17,446                       | 723   | 486,204                                | 37,997                          | 45.0          | 12.2                       | 32.8               |
| 2004                       | 12,601            | 5,013               | 17,614                       | 637   | 510,808                                | 40,537                          | 45.6          | 12.2                       | 33.4               |

\* Not available.

\*\* Excludes part-time active members with annual compensation less than \$1,000.



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**Table D-2**

**Retired and Inactive Membership Data**

| Valuation<br>Date<br>(July 1) | All Annuitants |                                    |                              | Terminated Members             |                                    |
|-------------------------------|----------------|------------------------------------|------------------------------|--------------------------------|------------------------------------|
|                               | Number         | Annual<br>Benefits in<br>Thousands | Average<br>Annual<br>Benefit | Average Age<br>Current Age     | Average Age<br>at Retirement       |
| 1987                          | 6,036          | \$ 43,236                          | \$ 7,163                     | *                              | *                                  |
| 1989                          | 6,330          | 49,546                             | 7,827                        | *                              | *                                  |
| 1992                          | 6,927          | 63,483                             | 9,165                        | *                              | *                                  |
| 1994                          | 7,530          | 78,183                             | 10,383                       | *                              | *                                  |
| 1996                          | 7,896          | 87,351                             | 11,063                       | *                              | *                                  |
| 1998                          | 8,362          | 99,040                             | 11,844                       | 69.6                           | 57.3                               |
| 2000                          | 9,021          | 117,227                            | 12,995                       | 69.3                           | 57.0                               |
| 2002                          | 9,768          | 139,131                            | 14,244                       | 69.1                           | 56.8                               |
| 2004                          | 10,375         | 159,776                            | 15,400                       | 69.1                           | 56.7                               |
|                               |                |                                    |                              | Number<br>Vested<br>Terminated | Number<br>Non-Vested<br>Terminated |
|                               |                |                                    |                              | 1,105                          | 5,722                              |
|                               |                |                                    |                              | 1,152                          | 6,479                              |
|                               |                |                                    |                              | 1,190                          | 8,158                              |
|                               |                |                                    |                              | 1,256                          | 9,308                              |
|                               |                |                                    |                              | 1,485                          | 8,231                              |
|                               |                |                                    |                              | 1,620                          | 7,861                              |

\* Not available.

**Teachers' Retirement System  
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**Table D-3**

**Contribution Rates**

| Valuation Date<br>(July 1) | Contribution Rates |          |         | Normal<br>Cost Rate | UAAL<br>Rate* |
|----------------------------|--------------------|----------|---------|---------------------|---------------|
|                            | Employee           | Employer | Total   |                     |               |
| 1992                       | 7.044%             | 7.459%   | 14.503% | 9.876               | 4.627%        |
| 1994                       | 7.044%             | 7.470%   | 14.514% | 9.494               | 5.020%        |
| 1996                       | 7.044%             | 7.470%   | 14.514% | 9.328               | 5.186%        |
| 1998                       | 7.044%             | 7.470%   | 14.514% | 8.880               | 5.634%        |
| 2000                       | 7.15%              | 7.58%    | 14.73%  | 9.71                | 5.02%         |
| 2002                       | 7.15%              | 7.58%    | 14.73%  | 10.33               | 4.40%         |
| 2004                       | 7.15%              | 7.58%    | 14.73%  | 10.34%              | 4.39%         |

\* The unfunded actuarial accrued liability rate is the amount available to amortize the unfunded actuarial accrued liability.  
It is equal to the total contribution rate, minus the normal cost rate.

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**Appendix E**

**Glossary**

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the Teachers' Retirement System Retirement System. Defined terms are capitalized throughout this Appendix.

**Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement, and retirement; changes in compensation, rates of investment earnings, and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

**Actuarial Cost Method**

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.

**Actuarial Gain (Loss)**

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

**Actuarial Present Value**

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

**Actuarial Valuation**

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

**Actuarial Value of Assets**

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

**Actuarially Equivalent**

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

**Amortization Payment**

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

**Entry Age Actuarial Cost Method**

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

**Normal Cost**

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

**Actuarial Accrued Liability**

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

**Unfunded Actuarial Accrued Liability**

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

**Accrued Benefit**

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

**Projected Benefits**

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.

**Unaccrued Benefit**

The excess of an individual's Projected Benefits over the Accrued Benefits as of a specified date.

# **STATISTICAL SECTION**

**REVENUES BY SOURCE & EXPENSES BY TYPE**

**CONTRIBUTION RATES**

**MEMBERSHIP**

**ACTIVE and INACTIVE MEMBERS**

**RETIRED MEMBERS and BENEFIT RECIPIENTS**

**LOCATION OF BENEFIT RECIPIENTS**





**Teachers' Retirement System**  
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**Revenues By Source**

| <u>Year</u> | <u>Employee<br/>Contributions</u> | <u>Investment<br/>Income</u> | <u>Other</u> | <u>Total</u> |
|-------------|-----------------------------------|------------------------------|--------------|--------------|
| 1994 – 1995 | 37,782,158                        | 72,498,507                   |              | 149,479,691  |
| 1995 – 1996 | 39,174,350                        | 98,083,315                   | 189,823      | 178,074,220  |
| 1996 – 1997 | 40,348,306                        | 104,797,668                  | 101,267      | 186,886,963  |
| 1997 – 1998 | 41,937,700                        | 102,174,892                  | 200,083      | 188,788,802  |
| 1998 – 1999 | 42,641,714                        | 102,501,716                  | 122,732      | 190,253,014  |
| 1999 – 2000 | 45,599,246                        | 112,924,791                  | 696,779      | 207,068,900  |
| 2000 – 2001 | 48,277,894                        | 162,712,312                  | 617,258      | 262,597,412  |
| 2001 – 2002 | 47,872,258                        | 99,058,806                   | 762,677      | 199,212,453  |
| 2002 – 2003 | 50,221,491                        | 99,289,817                   | 758,298      | 203,546,556  |
| 2003 – 2004 | 51,382,941                        | 133,206,267                  | 770,631      | 241,133,555  |

**Expenses By Type**

| <u>Year</u> | <u>Benefit<br/>Payments</u> | <u>Withdrawals</u> | <u>Investment<br/>Expenses</u> | <u>Administrative<br/>Expenses</u> | <u>Total</u> |
|-------------|-----------------------------|--------------------|--------------------------------|------------------------------------|--------------|
| 1994 – 1995 | 78,589,558                  | 3,373,147          | 177,081                        | 628,596                            | 82,768,382   |
| 1995 – 1996 | 83,763,230                  | 4,158,612          | 12,711,571                     | 684,885                            | 101,318,298  |
| 1996 – 1997 | 88,631,324                  | 3,839,562          | 12,596,802                     | 675,961                            | 105,743,649  |
| 1997 – 1998 | 94,204,970                  | 4,826,198          | 10,381,523                     | 881,452                            | 110,294,143  |
| 1998 – 1999 | 100,028,083                 | 5,126,013          | 9,686,951                      | 1,360,660                          | 116,201,707  |
| 1999 – 2000 | 109,231,029                 | 5,271,306          | 10,667,097                     | 1,293,805                          | 126,463,237  |
| 2000 – 2001 | 118,841,895                 | 5,370,493          | 10,243,034                     | 1,715,782                          | 136,171,204  |
| 2001 – 2002 | 130,006,163                 | 6,472,327          | 5,481,637                      | 1,606,737                          | 143,566,864  |
| 2002 – 2003 | 140,229,496                 | 6,468,324          | 3,709,410                      | 1,860,967                          | 152,268,198  |
| 2003 – 2004 | 150,270,797                 | 5,843,069          | 3,886,875                      | 1,506,694                          | 161,507,435  |

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**Contribution Rates**

EMPLOYEE

|             |        |
|-------------|--------|
| 1937 - 1973 | 5.000% |
| 1973 - 1975 | 5.125% |
| 1975 - 1977 | 6.125% |
| 1977 - 1983 | 6.187% |
| 1983 - 1999 | 7.044% |
| 1999 -      | 7.150% |

EMPLOYER

|                     |        |
|---------------------|--------|
| 1937 - 1945         | NONE   |
| 1945 - 1959         | 3.750% |
| 1959 - 1969         | 4.000% |
| 1969 - 1971         | 4.500% |
| 1971 - 1975         | 5.125% |
| 1975 - 1977         | 6.250% |
| 1977 - 1981         | 6.312% |
| 1981 - 09/30/81     | 6.432% |
| 10/01/81 - 06/30/83 | 6.463% |
| 1983 - 1985         | 7.320% |
| 1985 - 1989         | 7.428% |
| 1989 - 1993         | 7.459% |
| 01/01/94 -          | 7.470% |

*Unless otherwise noted, contribution rate changes occur on July 1.*

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**Membership**

**Active and Inactive Members**

| <u>Period Ended</u> | <u>Active<br/>Members</u> | <u>Inactive<br/>Vested<br/>Members</u> | <u>Inactive<br/>Non-vested</u> | <u>Total</u> |
|---------------------|---------------------------|--|--------------------------------|--------------|
| June 30, 1995       | 18,062                    | 1,130                                  | 6,201                          | 25,393       |
| June 30, 1996       | 18,332                    | 1,012                                  | 6,050                          | 25,394       |
| June 30, 1997       | 18,222                    | 1,173                                  | 7,560                          | 26,955       |
| June 30, 1998       | 18,205                    | 1,179                                  | 8,061                          | 27,445       |
| June 30, 1999       | 18,287                    | 1,209                                  | 8,612                          | 28,108       |
| June 30, 2000       | 18,423                    | 1,245                                  | 9,212                          | 28,880       |
| June 30, 2001       | 18,530                    | 1,359                                  | 10,034                         | 29,923       |
| June 30, 2002       | 17,262                    | 1,611                                  | 8,834                          | 27,707       |
| June 30, 2003       | 18,285                    | 1,519                                  | 7,736                          | 27,540       |
| June 30, 2004       | 18,257                    | 1,607                                  | 7,723                          | 27,587       |

**Retired Members and Benefit Recipients**

| <u>Period Ended</u> | <u>Retirement</u> | <u>Survivors</u> | <u>Disability</u> | <u>Child<br/>Benefits</u> | <u>Total</u> |
|---------------------|-------------------|------------------|-------------------|---------------------------|--------------|
| June 30, 1995       | 6,800             | 365              | 274               | 35                        | 7,474        |
| June 30, 1996       | 7,011             | 370              | 273               | 34                        | 7,688        |
| June 30, 1997       | 7,212             | 366              | 279               | 44                        | 7,901        |
| June 30, 1998       | 7,400             | 376              | 276               | 36                        | 8,088        |
| June 30, 1999       | 7,661             | 377              | 282               | 38                        | 8,358        |
| June 30, 2000       | 7,927             | 399              | 291               | 23                        | 8,640        |
| June 30, 2001       | 8,288             | 398              | 294               | 36                        | 9,016        |
| June 30, 2002       | 8,615             | 401              | 295               | 31                        | 9,342        |
| June 30, 2003       | 8,957             | 401              | 294               | 30                        | 9,682        |
| June 30, 2004       | 9,246             | 401              | 295               | 28                        | 9,970        |

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**Location of Benefit Recipients**

|               |     |                |       |                      |         |
|---------------|-----|----------------|-------|----------------------|---------|
| Alabama       | 6   | Michigan       | 15    | Utah                 | 40      |
| Alaska        | 28  | Minnesota      | 67    | Vermont              | 3       |
| Arizona       | 241 | Mississippi    | 2     | Virginia             | 24      |
| Arkansas      | 9   | Missouri       | 24    | Washington           | 352     |
| California    | 155 | Montana        | 7,723 | West Virginia        | 6       |
| Colorado      | 103 | Nebraska       | 24    | Wisconsin            | 25      |
| Connecticut   | 4   | Nevada         | 104   | Wyoming              | 87      |
| Florida       | 43  | New Jersey     | 3     | District of Columbia | 1       |
| Georgia       | 7   | New Mexico     | 22    | APO                  | 3       |
| Hawaii        | 11  | New York       | 15    | Australia            | 4       |
| Idaho         | 126 | North Carolina | 17    | Canada               | 14      |
| Illinois      | 16  | North Dakota   | 82    | Denmark              | 1       |
| Indiana       | 6   | Ohio           | 10    | Egypt                | 1       |
| Iowa          | 16  | Oklahoma       | 21    | England              | 2       |
| Kansas        | 14  | Oregon         | 159   | Germany              | 1       |
| Kentucky      | 6   | Pennsylvania   | 7     | New Zealand          | 2       |
| Louisiana     | 6   | South Carolina | 6     | Puerto Rico          | 1       |
| Maine         | 2   | South Dakota   | 41    | Scotland             | 1       |
| Maryland      | 4   | Tennessee      | 13    | South Africa         | 1       |
| Massachusetts | 6   | Texas          | 65    | TOTAL                | * 9,798 |

\*172 recipients receive two benefits



75 copies of this public document were published at an estimated cost of \$6.00 per copy, for a total cost of \$450.00, which includes \$450.00 for printing and \$0.00 for distribution.